

The Dental Digest.

Vol. VIII.

CHICAGO, AUGUST, 1902.

No. 8.

Original Contributions.

AN ORIGINAL SYSTEM OF TIGHTENING LOOSE LOWER INCISORS AND CUSPIDS, EMBRACING A METHOD OF SECURING SUBSTITUTES WITHOUT CLASPS OR PLATES, WHEN THESE TEETH ARE MISSING; TOGETHER WITH A DISCUSSION OF THE QUESTION OF PULP DEVITALIZATION— WHEN AND HOW—IN SOUND TEETH.

BY D. D. SMITH, M. D., D. D. S., PHILADELPHIA. READ BEFORE THE
NEW YORK ODONTOLOGICAL SOCIETY, FEB. 18, 1902; ALSO
BEFORE THE CINCINNATI ODONTOLOGICAL SOCIETY,
MARCH 19, 1902.

(Continued from the July DIGEST, p. 547.)

I have made the assertion that we should remove dentin freely from the internal portion of the tooth, for the purpose of placing the root in the best possible condition for future service. I should like to show, from the rough drawing I am now making (illustrating on blackboard), why this is so. The utility of a tooth is greatly dependent upon its cemental and pericemental relations; a firm vital connection between root and alveolus is of far greater importance than the condition of that portion of the tooth we call the crown. It may sound strange for me to say that when the pulp of a tooth has been devitalized, it does not matter very much, with our present methods, what becomes of the crown. Nevertheless, it is true, for we can replace it with something quite strong enough, just as useful, and as artistic as the original, and the root, which with the death of the pulp is all devitalized, except the cementum and the pericementum, will never know whether it is carrying what nature placed there for the crown, or what we

may substitute. There can be no question about this, so we should aim to place the root in the best possible relationship with the alveolus, for it is upon this that the utility and permanency of the tooth depends. The only living osseous part of a tooth with a devitalized pulp is the cemental structure which forms the external portion of the root. Around that is thrown what is found around every bone in the system—a pericemental membrane, which, nourishing the cemental structures, makes the root a living organ within the alveolus. All this indicated by these lines (illustrating) is really dead matter; all this dentin, inseparably united to this living cementum which surrounds it, is not only without vitality, but is permeated with decomposable matter. Now, what does common sense say we must do if we would place this cementum in harmonious relationship with this devitalized dentin and with the membranes which nourish it? It says, "Disinfect these tubules and the intermediary substance between them, so that the cemental structure shall retain living contact with the dentin, just as though the dentin itself were alive," and this can be done.

There is often with death of the pulp seemingly a special effort on the part of the pericementum to increase the cemental structure for the benefit of the root in the alveolus. This is seen in new deposits of cementum upon itself. Deposits on the outside of the root are especially noticeable in connection with devitalized teeth in young subjects. Young teeth when devitalized are frequently subject to exostosis. We find this in molars and in bicuspid, especially, and in these cases it is to be reckoned a fortuitous condition, for this accretion being analogous to the cementum, serves to augment and reinforce the living part of the root. The thicker the cementum is, within certain bounds, the better the root will be retained in the alveolus.

Now, is it not perfectly apparent that if we would place this living cementum and the devitalized dentin in the most harmonious relationship, we must remove from the dentin that which is obnoxious to the living matter that remains? What is the harmful matter in devitalized dentin, and what does it come from? I once heard an eminent practitioner from Chicago say, speaking upon the subject of pulp-putrescence, that "the odors came down into the tooth." Shall we talk of odors coming up or down into a tooth? If so, where do they come from? Where can they come from, except it be from the circulating media around the

tooth? Do the vessels which surround the tooth, vessels which carry nutrient matter to it, also bring foul odors and deposit them in this devitalized tooth? No. Do they come into the tooth from any outside source? By no means. There is nothing at all approaching such process in connection with pulpless teeth. From whence then do our troublesome odors arise? Manifestly in the once living matter which is now the subject of decomposition in the tubules and the intermediary substance; in decayed matter under fillings, and in bacterial generations which may in any manner be confined in a tooth. These conditions—decomposition within the dentin itself—become obnoxious to the living cementum of the root, and as a result we have periosteal disturbance, inflammation and alveolar abscess.

How then shall we interpose for the prevention of these untoward conditions? Not, surely, by introducing a filling into the root canal to prevent odors from coming down or up. We will rather first of all remove liberally from the internal portion of the root the substance which through decomposition engenders bacterial formations and odors.

Are we injuring the tooth—a devitalized tooth, in doing that? If for crowning we were dependent upon the old wooden pivots, or upon a pin or post in the center of the root, as in case of the Logan crowns, then possibly we should be constrained to save all this tooth substance for strength; but fortunately we are not dependent upon a central support alone and we may remove as much of the dentin as we deem best. One thing we may not do, and this prohibition is absolute; we may not encroach upon any portion of the cementum or of the pericemental membrane. When Dr. Atkinson was living I understood him to say we should go through the root until we drew blood. With all deference to the teachings of that brilliant man, who did so much for the advancement of dentistry throughout the world, such procedure is a mistake. We should not encroach upon this cemental structure at any point. When we do we are doing violence and injury to the tooth. But we may take away from this dentinal substance, which forms the body of the tooth-root, and which with the death of the pulp becomes dead matter, and thus do a positive service to the living cementum on the root. By removing dentin which is the source of infection, we place the root and tooth in a better condition for future preservation and usefulness.

It remains now only to speak of the medicaments and treatment, after having removed as much as we can of the infectious matter from the internal substance of the tooth. There are certain roots, especially the mesial, of the lower molars, and the roots of the first upper bicuspid (which we frequently find bifurcated), where great care is required to follow the canal and avoid injury to the cemental structure. There are others, as the palatine root of the upper molars, the root of the second bicuspid, of the central, of the cuspid, and frequently of the lateral, where we can remove dentin freely. Having done that, what other means can we employ to further safeguard the remaining dentin in these pulpless roots?

If it were proper to speak of a specific in dentistry, and I were asked to name the one remedy which might be used with safety and certainty in all teeth and roots for the purpose of permanent disinfection, I would unhesitatingly recommend pure wood creosote. I am aware that the newer practice of dentistry runs in other directions, and multiplies remedies to the bewilderment of the dentist and the injury of patient. Thirty-five years of experience have abundantly shown that creosote is the one remedy tolerated and beneficial in all cases. It does its work as a disinfectant and a corrective, and induces harmonious relationship between the devitalized dentin and the living cementum better than any agent we know. It is a perfect root disinfectant, destroys bacteria, and can be used without injury to any tooth. It is not specially pleasant to the taste, but all things considered, it is the least objectionable of the effective medicaments for root dressing. The objections to it are as nothing compared with the great benefits resulting from its use.

And now one other word in regard to root filling. There has been a great deal of discussion these last few years about "immediate root filling." Just now the talk is chiefly "porcelain inlay" and "extension for prevention," but root filling and immediate root filling have occupied so much time and space that one might almost conclude that the filling of roots is the main operation in dentistry. Of course, the root can be filled immediately after removing a pulp, but are we to understand—and I have never seen any distinction made in the journals or in discussion as to *when* it shall be done—that a root should be filled immediately after removing a putrescent pulp from it? If so, the probabilities are that you will have an

abscess on that tooth. No tooth or root with putrescent remains in it should ever be permanently filled until there has been thorough and proven disinfection, and this is best accomplished: 1st, by free removal of dentin, and 2nd, by repeated root dressings of creosote. If you institute immediate root filling where you have removed a freshly devitalized pulp without treatment you may not know the difference for two or three years, but the time most likely will come when your patient will be made aware of the mistake.

Unless measures are instituted by the practitioner after pulp removal for the disinfection of these tubules (pointing to diagram), the time will probably come when decomposition of the matter in them and the intermediary substance will become a source of irritation, and trouble will ensue. In an old person it may not, but in a young subject, where the consolidation is not complete, sooner or later these results will follow. A much better method, and one that should be adopted for the treatment of roots to be used in this process of tightening loose lower front teeth, is to disinfect the internal portion of the tooth, and that is best accomplished by sealing creosote in the root for about twenty-four hours. By this procedure perfect comfort will result from using teeth in the manner to which I now purpose to direct attention.

Before attempting a description of this little appliance, allow me to answer a question asked a moment ago, while you were examining the practical case in the mouth of this patient, that properly belongs with what has been said and in this connection—"What do you fill roots with?" Let me change the form of the question and ask—What ought roots to be filled with, regardless of the practice of any one man? You will understand from what has been said that I attach little importance to the filling of a root, compared with the removal of the cause of root infection. We should give attention to the filling of the root, of course, but the importance of this operation has been unduly magnified.

When the root has been thoroughly disinfected, inasmuch as nothing detrimental can come down or up through the apical foramen, what special difference can it make as to what the root canal is filled with? The point of importance is *the disinfection of the root*, so as to place the cemental tissue in such condition that the pericemental membrane will take care of it, and so of the entire root. When we have these conditions it makes very little difference

what the root is filled with, but all things considered, I think the best root-filling material is a good oxychlorid of zinc.

Some lay great stress on gold for this purpose. What difference does it make whether we use gold, lead, tin-foil, or some other substance? Gold has nothing to do with the preservation of a root; and it is the *preservation* and not the *filling* of the root that we want. Gold has no influence in preserving the root from infection, but oxychlorid of zinc, itself a disinfectant, has, and it thus becomes the best material which can be used for this purpose.

Raw cotton saturated in creosote makes a good filling, especially for small tortuous roots. I have banished absorbent cotton from my office, as I do not believe in it at all. If there is anything in the dentinal portion of tooth which is infectious, the use of absorbent cotton in it will tend to draw same to itself, and the cotton may

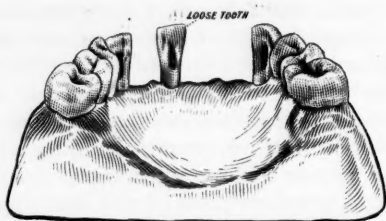


FIG 1.

eventually become infected and thus cause trouble. The fibers of raw cotton may be used without this danger. Saturating fibres of this cotton, twisted into a loose thread, with a thin preparation of oxychlorid of zinc for large roots, or with pure wood creosote for small roots, furnishes possibly the best root-filling material yet suggested.

But to turn now to this method for the mechanical tightening of loose teeth. Every one of us has cases in practice where the lower incisors have become loose from absorption of the alveolus, so loose as not only to disqualify them for service, but to render them a positive discomfort and annoyance to the patient. Such teeth mechanically fixed as to their crowns, and further absorption prevented, will do duty perfectly for years. The first step in these cases is the destruction of the pulps in the loose teeth and in two contiguous tight teeth—one on either side. The cuspids are gener-

ally to be preferred for supporting teeth, as they are the largest and most secure. It should be noted that if nature had planned to make the very best shape of tooth for this kind of a support, she could not have done better than she has in giving form to the lower incisors and cuspids.

The first attempt I ever made to tighten such loose teeth was eighteen or twenty years ago, when in a single instance I cut down from the incisive edge between the two plates of enamel in two loose teeth and two tight ones, making a kind of gutter, into which I dropped a gold wire and filled around it as well as I could with foil. I cannot now imagine anything more clumsy, and yet it gave a kind of service for a number of years; but the accumulations upon the lingual faces of these teeth finally did their inevitable work and the whole thing—wire and teeth—came out. That experiment perhaps

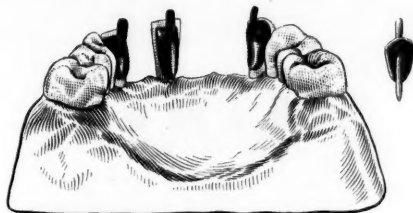


FIG. 2.

first gave me the idea that it was possible to continue loose teeth in service. My second attempt was much more on the order of the present system; it was the insertion of a missing right lower lateral. After devitalizing and entering the right cuspid and central from the lingual face, I formed a piece of gold wire into something like a large inverted u, soldering the tooth to the cross piece. The ends were adjusted to drop into the roots of the adjoining teeth, where they were secured with gutta-percha. This crude appliance, inserted some fifteen years ago, with the ear marks of the present system, is still in service.

The manner of opening into these teeth for making the arsenical application has already been described. Remove the enamel with a carborundum wheel at the point of entrance, sink drill-pit into dentin with sharp bur, enlarge and shape cavity until suited for holding arsenical application and for securing the temporary stopping. When devitalized, the entrance should be enlarged and made as

direct as possible to canal to admit a Gates-Glidden drill into the root. I have discarded broaches entirely for removing pulps. The drill not only removes the pulp tissue from the roots better, but it enlarges the canal and removes the dentin, as already advocated, at the same time. The canal in these roots can be enlarged to admit a No. 16, and frequently a No. 15, gold wire. This wire, of 20 carat gold, is sufficient for the support of any case. It should extend into the root from one-half to five-eighths of an inch and be so fitted that it will be stable without being tight. As before stated, we might almost think that nature had shaped these teeth, with special reference to this system. Here, as you see (pointing to drawing), at this enlarged lingual part of the crown it can be cut away for more convenient entrance to the root, and to make room for the gold plate which is to form the lingual face of the tooth, without the slightest injury to the tooth.

Having shaped this lingual face as desired, a piece of pure gold



FIG. 3.

plate, No. 30 gauge, is roughly burnished onto it, a small hole made through this gold for the wire or post, and thus the gold back and post are brought into their proper relationship. They can then be waxed together and withdrawn for slight soldering. When the post and the thin back have been caught with solder, the gold-plate back should be carefully burnished into place on the tooth while holding the post firmly in position. The gold should now be trimmed and fitted, when it can be strengthened to any extent with solder.

For convenience in handling, and for certainty of withdrawal in the impression, the post of gold wire should always be left standing out of the tooth from one-fourth to three-eighths of an inch until the final finishing of the fixture. In more recent cases I allow the pure gold-plate back to cover the entire lingual face of each tooth, except just at the cutting edge, where it is shortened to escape detection from the front. With each support carefully fitted and in place in its tooth, a perfect impression, which need embrace only the teeth involved, is secured in plaster. When this is withdrawn it should hold the supports in their proper positions, and be treated in the

usual way for making a cast, which is sometimes improperly called a "model."

Treatment of these cases at this stage has been to me until within the past year a most perplexing part of the work. Formerly I made these little casts of plaster, but this necessitated their withdrawal from the plaster teeth with all the attendant risk of displacement, before investing for soldering. It was a great comfort as well as a great gain when the suggestion came to me to make them and all kindred work of investment material. It may be well to speak of this article, there being so many kinds. I have never found anything so satisfactory as *coarse* silex—sold by the dealers—and plaster, in about the proportion of one part of silex to ten of plaster.

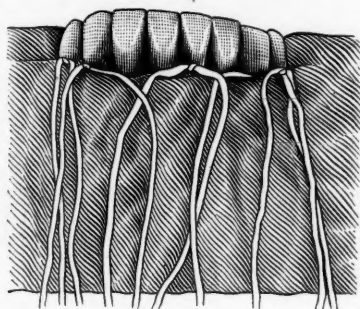


FIG. 4.

This will stand the fire far better than sand and plaster, or any other mixture that I know.

These supports, while thus in place on the original cast, and while in the exact relation they occupied on the teeth in the mouth, can be securely soldered together. All that now remains is to cut off the protruding portions of the posts, dress and finish the surface of the appliance, and it is ready to be placed in position. If teeth are to be supplied the same steps are taken until the impression is removed from the cast. At this point the teeth—cross-pins are the best—previously selected, are fitted to the cast. A stay or backing of thin pure gold is now accurately fitted onto the lingual face. (Here let me fix a little point: To hold this thin metal in contact with the tooth while burnishing it into place, first fit and burnish it as best you can, then remove and melt on the tooth a very thin coat

of some hard wax. When reburnishing for final adjustment the wax holds the stay in place and you are able to fit it to the tooth perfectly and in a moment's time. No harm comes from the use of the wax for this purpose, as it burns out completely in soldering, leaving no stain.) Having burnished the stay onto the tooth in this manner, with a sharp knife a shaving from two sides of the platinum pins should be cut down to the gold (the pins should not be bent over on the stay), to hold the stay securely in place and to assist the attachment of pins with the solder.

We are now to give the inner or lingual part of the porcelain facing the shape of the natural tooth. I use crown metal for making this, forming it into a half tube, as it were, fitting the sides to the stay and the end to the cast, so that when completed it will rest

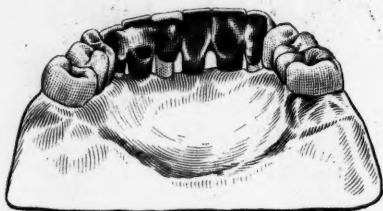


FIG. 5A.

lightly on the gum. The stay can be soldered to the pins and the half tube to the stay at one soldering. This done, it can be filed into the exact shape of the lingual portion of the natural tooth. Now burnish a piece of thin gold to cover the crown end of the opening, invest the tooth and solder from the inside of the tube. Dressing and finishing completes the making up of the tooth. It is now ready for its position on the cast, where it is to be invested and properly and securely soldered to the supports which are in position exactly as in the natural teeth in the mouth. When supports and teeth are soldered together, and the case is finished ready for insertion, the rubber dam is applied, as it can be in every instance, and the case cemented into place without haste or fear of moisture. If the claims regarding the new "Fellowship" cement prove to be well founded, as now seems likely, the application of the dam for setting these cases, when this cement is used, will be superfluous.

A thorough comprehension of the requirements of these cases, coupled with exactness and delicacy in manipulation, will in every instance produce most satisfactory results.

Discussion (New York Odontological Society). *Dr. Smith:* Dr. Jarvie asks how deep to drill, and I would reply that it makes no difference whether the cavity is deep or shallow, so long as we get to vital, sensitive dentin and have room for the application and the temporary stopping which is to secure it. The cavity should be so shaped as to positively secure the application. Just here I would emphasize the importance of the retaining medium, for I am satisfied that it has much to do with the effectiveness of the work of the arsenic on sensitive dentin. The arsenic must be *confined* in the

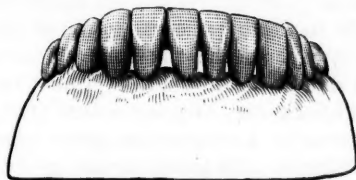


FIG. 5B.

cavity and be kept dry, cotton as a covering will not answer. Dr. Walker asks what I use to secure the bridges, and I would reply that I employ the best oxyphosphates I can get.

Dr. A. L. Northrop: Dr. Smith would give us to understand that whenever Dr. Atkinson went into the pulp cavity and root he perforated the apical foramen as a part of his treatment, but as I recollect Dr. Atkinson's statement, it was, that wherever there was an incipient abscess the quickest way to relieve it was to go through the foramen.

Dr. Smith: I am an enthusiastic admirer of Dr. Atkinson and his service to the profession, and I did not mean to misrepresent him.

Dr. G. A. Mills: Dr. Atkinson advocated going through the root only when there was a pathological condition; otherwise he went through the gum. I have followed this method for years.

Dr. S. G. Perry: I agree with Dr. Smith as to the importance of the root, for it can be crowned many times if necessary. Much attention should be paid to cleansing the root and disinfecting the

tubules. I am in accord with Dr. Smith's idea as to the devitalization of pulps, and think it is all foolishness to try to save them simply because they are alive. However, we should keep the pulps alive for a few years in the case of young people, so as to have a solidified tooth. As to the use of creosote, I have employed it since beginning practice. It is seldom that I fill a root immediately after extirpation of the pulp, although I have done so when the pulp has been devitalized or been taken out under the influence of cocain. Where the pulp has been dead some time I never think of such a thing. I use creosote whether the apical foramen is open or closed. For a quarter of a century I have never varied from the use of oxychlorid of zinc, when there is a closed foramen. When the foramen is open I close it with a small quantity of gutta-percha, so the oxychlorid will not be pushed through. In filling the canals I use fine gold wire made to fit the case as nearly as possible. Cross-cuts are made on it to hold the silk better, a very little silk is rolled on to it and dipped in the oxychlorid, and the wire is then pushed to the end of the root. This is the best filling for this purpose, and for a quarter of a century has given better results than any other. I have listened with much interest to the idea of applying arsenic to freshly cut dentin rather than to the exposed pulp. Where the pulp was not inflamed I have drilled into many teeth without much pain, using care and a very sharp instrument. If Dr. Smith says pulps can be devitalized by his method without causing pain, I am glad to hear it. As regards the operation which Dr. Smith has described, it seems practical and proper, and I am sure it will do well. There is no reason why it should not be performed oftener and do away with so many plates, clasps and bridges. Of course, it requires courage and a skillful hand to drill into sound teeth. I should like to hear more from Dr. Smith about this tightening of loose teeth, as it is a large question.

Dr. J. D. Thomas, Philadelphia: For several years my teeth were so sensitive that I could hardly eat the softest food. Dr. Smith destroyed the pulps in several of them, and both roots and teeth have been perfectly comfortable ever since. He cut through the enamel with a carborundum disk and drilled through the dentin, and the moment the sensitive dentin was reached he applied the arsenic. In forty-eight hours I returned for treatment, having suffered no pain, and was really surprised when the doctor told me that the pulps were removed.

DENTAL SCIENCE AND LITERATURE, REPORT OF THE COMMITTEE.

BY G. V. BLACK, D.D.S., CHICAGO. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT SPRINGFIELD, MAY 13-15, 1902.

In planning a report on the dental literature of the year that has just passed I have been in some doubt as to what would best subserve the interest of this association. It seems to me that probably the most good would be done by speaking more particularly of the direction of thought, as shown by the literature offered, rather than reciting the particular things that have been done, or giving notice of the particular articles or books that have appeared. The function of books has come to be quite distinct from the function of journal literature. In the journals we introduce and try new subjects, and discuss the pros and cons of the old for the more immediate comparison of ideas. Books should register the more mature thought of the profession, that has in a greater degree been tried by comparison, discussions and usage. This is gradually becoming more nearly a fact than formerly, therefore books cannot be taken to represent the immediate or temporarily prevailing interests of the profession. These are represented by the journal literature. Professional books more nearly represent the graver and more permanent movements of thought as viewed in a series of years. As professional men our present interest is less in the particular books or articles that have been written than in the present trend of thought of the profession as a whole. I should have been glad to have been able to present more fully my views of this trend of thought, as shown by the literature published in the year; but to examine all of this literature for that purpose would have been too great a task. I have therefore taken five of the American journals that seem to me best adapted, and from an examination of the articles presented in these, as a test of the interest of the profession as shown by the journal literature, have based the conclusions that I will offer.

The year seems not to have given us special discoveries that will stand out in the future as landmarks in the progress of dental science or literature, but while this may be true, it is also true that much attention has been paid to our literature and a general activity has been noted among the writers and thinkers of the profession. I have collected a list of books that may be printed or

not, and have tabulated a little over 400 journal articles. I shall not recite either of these, believing that to do so would be of less interest to you than to give in a general way the impression that I have had from studying this literature. Of the books I shall speak of only one or two, and I may mention a very few of the journal articles. As to the general character of the literature, I may say that the writing shows continuous improvement in quality and in general character. While some articles appear that are disjointed and awkward in the literary sense, they are in the main earnest and instructive, and deserve the careful attention of every dentist.

For the most part the list of books will be passed without comment, but there are some things about which I feel like saying a word, particularly some criticisms that have been made which seem to be unjust regarding the work of Drs. Eckley, entitled "Regional Anatomy of the Head and Neck for Practitioners and Students of Dentistry." Some of these criticisms are curiosities in dental literature, for the reason that they have been made on the supposition that this book has been intended as the only book on anatomy to be placed in the hands of the dental student. The thought that a book on anatomy confined to the head and neck can be supposed by any teacher or writer of the present time to cover the subject of anatomy that the dental student should have is so far from my idea of the study that should be made of this subject that it is difficult for me to understand how such a criticism could be made. Certainly dental students of the present time should study anatomy as a whole. I know that such a thought never entered the minds of the authors, for I talked with them in regard to the book before it was written and while it was in preparation, and perhaps had to do with the suggestion that such a book be written. Certainly there was no thought or expression looking to the idea that the book should be the only one on anatomy for the dental student, but quite the reverse. Indeed, the character of the book is such that the student who has not had considerable study of the general subject will find much of it exceedingly difficult to read intelligently. It presupposes that the student has had considerable study of the general subject, and the evident intention of the book is to review those structures most important to the dental student, to the practical operations of the oral surgeon and to diagnosis. It is the first work attempted of this character, and the mistakes and omissions occurring in the

first edition may be corrected in future editions. My own notion has been that we need a regional anatomy for special use in an advanced course in oral surgery, special pathology and diagnosis. I am of the opinion that such a book should give the technique of surgical operations upon the cadaver and much that is not given in the work before us. Certainly such a work is needed at the present time. It is my belief that in the future we shall depend very much more on special works of this character than we have in the past, but let us have no thought that books with regional limitations are to be given our students for forming the groundwork of their dental education. They must have a full course in the anatomy and physiology of the human body.

The work on dental electricity by Dr. Custer seems to have been drawn out by the increased use of electricity by the profession, and although it must necessarily be improved because of the rapid advances that are now being made in the adaptation of electricity to our professional work, which will displace many of the present plans, it is certainly very good for the time and in a large degree necessary.

Some of the other books may also be regarded as very necessary, especially that on the internal structure of the face by Dr. M. H. Cryer, which is giving us a better understanding of the anatomical relations of the different portions and organs of the parts with which it deals; a book that should be carefully studied by every dentist.

It will be noticed in going over the list of books that a number of them are new editions of books previously published, most of which are improved and enlarged, and those who have the older editions will do well to have the new also.

The trend of thought of the profession is shown best by the journal literature, which is largely the outgrowth of the society meetings that have been held throughout the country during the past year. I may say, however, that a number of the best articles are those that have been written for journals and have not been read before societies. Still, many among the best are those that have been presented to the different associations. It is not my intention to make any distinction on this basis. There is a list of about 400 articles that have been published in five American journals: *The Dental Cosmos*, *Items of Interest*, *International Dental Journal*, *The Dental Digest* and *The Dental Review*. In

volume the matter is sufficient to make a considerable dental library, and it will be found in going over the articles somewhat carefully that almost every phase of dentistry has been covered partially and in some instances quite completely. If the whole were properly indexed, so that needed articles could be found in after-times, this literature would be much more valuable. These journal articles show very well the trend of thought that has been taking place during the year just passed. Some subjects have received great attention, and seem uppermost in the thought of the profession, while others that have been actively urged in years past have dropped out and we have lost sight of them in the literature of the year. It is very interesting to note these characteristics of our literature. If we should go back for fifty years and make an annual list of articles appearing on various subjects in dentistry we would find that some topics come to the front and are thoroughly discussed during a year or two or three, then drop out and are passed over for perhaps a dozen years, then come up again in some new form, or possibly in the old form, and are eagerly discussed for a time, and again drop out, giving place to other subjects. This I have noted particularly with some subjects, as, for instance, the capping of pulps, that for a series of years occupied the dental profession closely, and about which much was written and spoken. Then it dropped out for a time, to reappear later.

We would perhaps do well to divide the literature of the year into topics, without too great care as to the arrangement, and in a degree, represent the interest that has been taken in various phases of each subject. To me one of the most interesting features of the literature of the past year is the increased attention that has been given to the subject of *dental education*. In the classification of the articles that appeared in the dental journals I was somewhat surprised to find that this leads all the rest in the number of papers that have been presented. It must be noted, however, that a considerable number of the articles are only indirectly on the subject of dental education, while many others touch upon it in such a general way as to be only a reflex, if I may so term it, of the main interest. But among them there are a number of papers that deal with the methods of teaching of certain subjects, and the management of dental school instruction, that are particularly instructive and calculated to give the profession a very good idea of the plans of teaching. Among the many excellent ones is that by Dr. C. C.

Chittenden on "The Dental College Standard" (*International*, 1901, page 485), which should attract especial attention. A considerable number of these articles are presidents' addresses. As I have read the articles from time to time I have been pleased with some, and again I have wished that these addresses might be ruled out and be placed on the shelf as things of the past. It seems to me that the function of the president's address at the opening of our meetings is to discuss dental education, either in a general way or some particular phase of it, but these compose but ten of the fifty-nine articles on it. After all, I do not know of a better way of opening a society meeting than with a pleasant address. Its function is not necessarily to instruct, as it may be simply light and racy, although upon occasion it may deal with the most weighty subjects.

Anatomy. The subject of anatomy as it appears in our journal literature of the year is confined almost entirely to the treatment of special phases of anatomy of the teeth or of evolution of the teeth. One of the most notable articles in the series of sixteen that has appeared upon this subject is by Dr. Miller of Berlin on the preparation of teeth and the jaws for the macroscopic study of the relation of the different tissues, bone, enamel, dentin and cement, to each other. (*Cosmos*, 1901, p. 1109.) These have been presented in colorings that distinguish the tissues very definitely and beautifully. This phase of the study of tooth tissue seems to be new and should attract general attention. I have seen these specimens and they are among the most beautiful that have come to my notice. The plans of coloring are applicable to the study of the teeth of both man and animals, and especially to the study of those teeth that have complicated infoldings of enamel and cementum, found in the teeth of those animals that live upon a vegetable food or grain. These plans may be used in displaying the different tissues of the human teeth in our technic work to great advantage. Plans of the study of the *minute anatomy of the teeth*, and particularly of the enamel, have been advancing quite rapidly during the year, and more interest seems to have been taken in it in its relation to operative dentistry than formerly. In this work Dr. F. B. Noyes has taken a somewhat prominent part. The study of the *mal-forms of the teeth* has called out several articles, one of which was presented to this society at the last meeting, another by Dr. Gilmer at the National Dental Asso-

ciation, and still another by Dr. Miller of Berlin. Dr. Gilmer has been particularly fortunate in obtaining several very rare odontomes in his surgical work, and in giving well illustrated descriptions of them. (DIGEST, Dec., 1901, p. 953.)

Bacteriology. The journal literature shows a considerable interest in this subject, which is perhaps not manifested so much by special articles as by the intermixture of allusions to bacteriology very frequently through papers on other subjects. The articles which I have noted have generally been on some special phase of the subject, such as sterilization of instruments, the management of such sterilization, the application of antiseptics, etc. Few papers have appeared in our general literature upon the cultivation or isolation of bacteria. Accounts of original studies are almost entirely absent. The literature that has appeared, however, shows the general interest of the profession, the need of a closer and wider teaching of the subject in our dental schools, and the necessity of a wiser application of methods in general practice.

Diseases of the Enamel and Dentin. The study of the diseases of the enamel and dentin still holds the interest of the profession closely, and a considerable number of articles have been confined to this subject. They are devoted mostly to caries and erosion. It is rather difficult to give in a few words the general trend of thought upon this subject, as it is one on which the mind of the profession is still varying considerably. There is much more tendency, however, to study the influences of the surroundings of the teeth than has formerly been noted. The thought of the profession seems slowly swinging in that direction.

Michaels' study of the saliva, and the possible relation of its chemical constituents to caries of the teeth, is drawing more and more the attention of the thinking members of the profession; though perhaps none of us knows just what to think of the matter, or where these studies are tending. To most of us they seem to be studies that are reaching far out into the borders of the unknown and are difficult to follow. There are few in the dental profession who are prepared to go deeply into this field of work or even to understand its purport. Its solutions will probably require years of work. We have some promise in a brief article by Dr. E. C. Kirk that he will have something further to present on this subject shortly, which we look forward to with great interest. This topic properly belongs to the general subject of

serum pathology, and requires a close inside study of what has been done in that line of work, as well as an intimate knowledge of chemistry in its relation to the life of force.

In the meantime the study of the immediate local conditions under which caries occurs in the mouth is going forward and attracting closer and closer observation of dentists. This is apparent not so much in special articles written upon caries of the teeth, as in articles that have appeared on operative dentistry in its various phases. In this study the relation of immunity and susceptibility to caries is attracting more and more attention, and especially is the condition of increasing immunity with increasing age being more looked for and expected as an aid in the treatment of caries as it occurs in young persons than formerly. This has been emphasized in a considerable number of articles that have appeared. The interest that was aroused in the study of microbic plaques and films by the papers of Dr. J. L. Williams a few years ago continues. This appears in a number of articles in relation to operative dentistry, and in some of the articles on caries; and notably in an article in the May, 1902, *Cosmos*, by Dr. Miller, in which he gives a considerable study of this subject with illustrations, that should be carefully read. Closely related to this I may mention the study of extension for prevention, so-called, that seems to be increasing in interest and influencing the preparation of cavities more and more as its object and its relation to the recurrence of caries is becoming better understood. This was especially accentuated by a series of discussions that was precipitated in New York and Chicago by Dr. Ottolengui, the editor of *Items of Interest*, and again through a paper by Dr. G. S. Allen and the discussions upon it. These discussions have been published mostly in the *Items* of 1901, beginning page 322. Dr. Allen's paper and the discussions will be found in the *International*, May, 1902.

In addition to these, a considerable number of articles has appeared touching upon the last two subjects in connection with *filling operations*. One of the best of these is by Dr. C. N. Johnson, entitled "Critical Periods in the History of the Human Teeth," and published in the *Digest* of August, 1901, page 541.

The force of the human bite in its relation to filling operations has also been discussed frequently in articles that have appeared, and is bringing about such modifications in cavity preparation as to make fillings stronger and more substantial than formerly. In con-

nection with the study of the local conditions under which caries occurs, there appears to be a greater interest developed in tooth forms than was apparent heretofore in our journal literature. This is accentuated by a number of articles in which the forms of the interproximate space are discussed, also other questions of this character leading directly to a closer study of the natural tooth forms and the condition as to forms which promote cleanliness of the surfaces of the teeth, and in this way tend to limit decay, and especially recurrence of decay about fillings.

In filling operations the study of the manipulation of gold has been continued, and appears frequently in articles that have been published during the year. There has been some tendency apparent to make greater use of the crystal forms of gold than formerly. This matter has a somewhat peculiar history. For the last forty years various forms of crystal gold have come up for discussion, have created great interest, have appeared prominently in dental literature for a time, then faded out to reappear, and have again dropped out; while gold foil has held its place with but little interruption. This leads us to suspect that this new interest in the crystal forms of gold that has been manifested within the last year or two will also disappear with a little more time. The discussion of the *amalgam question* is continued, but has been very much less prominent recently, and our literature of the year past gives few notable articles upon this subject. While amalgam is discussed in a very considerable number of papers in its relation to the treatment of caries and some other subjects in dentistry, the special articles are confined to about half a dozen.

In looking over the literature with reference to the *diseases of the dental pulp*, I have been particularly struck with the absence of articles on pulp treatment. This is so complete that one is apt to conclude that any attempt to treat exposed pulps other than by their destruction and removal has passed out of the minds of dental practitioners. I remember that in the Seventies our literature was full of plans of treatment for saving the life of exposed pulps, but now this is all changed and the treatment of exposed pulps discussed in our literature is almost entirely with reference to destruction and removal and the filling of root canals. I relate this simply as a fact noted which should make us think whether we are doing the best that can be done under the circumstances as they present in practice.

The methods of *treating and filling roots* have received con-

siderable attention and present very divergent thought. The plans of root filling in vogue would seem unsatisfactory as judged from the apparent search for new material and ideas of procedure. There has been considerable interest manifested in the test of root fillings, or examinations of root fillings that have been made purposely for such examinations, notably by the Northern Illinois Society at its meeting this year, and by the National Association at its last meeting in Milwaukee. It is somewhat remarkable that the results of these fillings have not been very satisfactory, indicating that improvement in this operation is very necessary.

The treatment of alveolar abscess has developed sufficient interest to bring out a number of articles devoted especially to that subject. It does not appear, however, that there has been anything unusual offered during the year or any new thought evolved as to the treatment of alveolar abscess.

In oral surgery there has been unusual activity. There is more disposition on the part of dentists to take up and treat lesions of the face in a surgical way than has been formerly expressed. Possibly this impression is given me because I have been brought in closer touch with it, but it seems to me that there are a greater number of persons who are ready to take up and operate on diseases of the antrum, fractures, cleft palate, hare-lip, etc. Our journal literature shows twenty-five articles upon these subjects during the past year, which I think is a greater number than usual, and certainly the number of operations of this kind performed by the dentists who make this more or less a specialty is much greater than heretofore. Indeed, there is an increased interest manifested in this class of surgical work that is attracting to it more dentists than formerly, so much so that the general surgeon is coming more and more to recognize the dental surgeon in this field of work. For this reason, if nothing else, the dentist is called upon to give closer attention to surgical diseases of the mouth and face, and certainly a decided improvement and an increasing interest is manifested in this direction. The tendency of thought in the dental profession and among the laity is more directly that the dentist should do this work than formerly, and evidently the trend with the general surgeon is in the same direction. This being true, dentists will be called upon to increase their information on these subjects even if they do not wish to perform the operations themselves, for there will be a greater number of cases coming to them for consideration and ref-

erence to proper persons for their treatment. In this a high degree of intelligence is being demanded by the people.

Orthodontia. During the year the work in orthodontia seems to have increased, and a much larger number of men is giving the subject careful attention, as is manifested by the thirty articles, by almost as many men, in the journals named. The tendency seems to be to make this a specialty in dentistry, and more men are giving their whole time to the subject. While this is true, the general profession is also apparently taking much more interest in it. While we cannot discuss definite features of improvement in orthodontia coming out during the year, there is certainly a rapid and general advancement in methods and appliances used. The fixtures are lighter without losing strength, and of better adaptation than formerly. Movements of the teeth are made with more certainty and with greater safety. This naturally calls out a higher appreciation of this work by the people and they avail themselves of the advantages to a greater degree. This is awakening more interest in the dental profession, and we have every reason to believe that this feature of dentistry will become much more important and remunerative than the ordinary lines of practice within a few years. Judging from the literature of the subject presented during the year, and private inquiry being made in regard to it, it would seem that this subject is exciting as much general interest as almost any other in dentistry, and particularly in the country districts dentists will need to do much more of it than in the past.

Pyorrhea Alveolaris. "What is pyorrhea alveolaris?" is a very frequent question in private, that seems also to be asked by some of the writers of the twelve articles that have appeared on the topic. Of all the subjects in dentistry there seems to be no other in which there is so much confusion of thought as this, which fact is manifested in the literature. It is seldom that two men have the same view, and the last year is no exception to the former rule. Some consider the so-called pyorrhea alveolaris a group of diseases differing in manifestations and requiring different treatment, others think differently and regard all of these as slightly different manifestations of the same pathological condition, still others seem to consider it as only a symptom of various pathological conditions. The confusion is so great that it is difficult to tell what is meant by pyorrhea alveolaris or by the large number of other names applied to the diseases of the periodontal membrane beginning at the gingival

margin. It is earnestly to be hoped that some skillful man will arise and straighten out this difficulty and bring the profession to an understanding of the true nature of this condition, or these conditions. It is a disease that destroys more teeth perhaps than any other to-day.

Anesthetics. The study of anesthetics has not presented any considerable activity during the year. In the journals that I have named nine papers have appeared, and all of these but one are on general anesthetics, including chloroform, nitrous oxid, sulphuric ether and ethyl chlorid, the bulk of them being on nitrous oxid. It would seem that it is eminently the dental anesthetic. It is notable that in the year passed but one article appeared on local anesthetics, indicating that they are not so much thought of as they were a few years ago. In passing over the journals I noted particularly that I found no mention of cataphoresis, a subject that filled our journals a few years ago. So it is, subjects come up, become prominent, pass out of sight, to arise again probably within a few years.

Oral hygiene and prophylaxis has been treated with increased interest during the last year, not only as a topic of special study, but also as a matter of inquiry among the children in public schools. Very considerable interest in that direction has been manifested. The articles presented on it are not lengthy, nor of a great number—only fifteen during the year, yet the inquiry in this direction seems to have been greater than the number of papers would indicate. It has been actively pushed by some of our associations, and much printed matter has been circulated with reference to examinations as to the hygienic condition of school children's mouths, and a collection and tabulation of records intended to show the conditions found has been attempted. Much of the work seems to have been directed toward better education of the people along this line, which, if it can succeed in bringing about better conditions, is certainly very desirable.

Ethics and Jurisprudence. These seem to have interested the dental profession more this last year than formerly, and there is certainly a growing interest in the ethical relation of the members of the profession to each other and to their patients. This is manifested in a number of well-written articles. All of the five principal journals present from two to four papers on this subject during the year, which is above the average number. The articles that I have classified under jurisprudence relate for the most part to dental

laws, legislation and the decisions of courts under the dental laws. In this field there has been unusual activity, and the general profession will do well to look carefully into the tendencies. I would point out as especially important the recent decision of the Supreme Court of Wisconsin, published in the DIGEST for Jan., 1902, page 58, and in the reports of the Wisconsin State Board of Dental Examiners. This decision seems to confirm the power of state boards to regulate the operations of dental schools more completely than has heretofore been done.

The legal opinions recently given the Illinois State Board of Dental Examiners upon the Illinois Dental Law, published in the DENTAL DIGEST for April, will be a surprise to many dentists in this state. Under this opinion, which has the authority of law unless it should be reversed by a decision of the courts, our Illinois Law becomes very different from former interpretations and usage, the principal point of change being that under this opinion the classes of persons eligible to examination and license by the Board are limited to: 1st. Those who were practicing in this state at the time of the passage of the Law. 2d. Those who may come into this state from another state, having had ten years of legal practice in the state from which they come. 3d. Persons who are graduates in medicine. All other persons are debarred from examination. Graduates from reputable dental schools can be admitted to license by the Board without examination as heretofore.

There is perhaps no other subject that is arousing more attention to-day than *the working of porcelain* in its various phases of adaptation to dental purposes. This has been stimulated in a great degree by the invention of the electric furnace, which renders the baking of porcelain more certain and easier of accomplishment. Nowadays one who is properly equipped may bake a porcelain crown or inlay in a few minutes beside his chair, without the disturbance of an oven that would be noticed by his patient. The adaptation of porcelain inlays to the replacement of lost parts of a tooth in exposed positions and some features of dental prosthetics are taking a much wider range than formerly and are coming rapidly into greater use. I do not forget that porcelain has come to the front spasmodically a number of times within my memory, to fade away again and pass practically out of sight, but it seems to have come to the front recently in an adaptation that has in it so much more promise than formerly that there is more probability that it will

hold permanently in some of its forms. I find in the journals named twenty articles that may be regarded as upon porcelain or porcelain inlays; articles that discuss the qualities of porcelain particularly, as well as its adaptation to the special work in hand. This is aside from articles on porcelain crowns or bridges, and porcelain artificial teeth. In this discussion there is a curious fact noticeable. While the dentists of the eastern part of our country are generally inclined to use the low-fusing body, those of the western part are inclined to use the higher-fusing bodies. It seems singular that there should be local divisions upon such a subject.

In addition to this, porcelain is also discussed in twenty-two articles on crowns and bridges, and I notice a very good article by Dr. Hart J. Goslee in the *Items* of 1901, page 406, on the history of the development of crownwork; a paper of more than ordinary interest upon this subject. Among the twenty-two articles devoted to it in the *Items*, *Digest*, *Review* and *Cosmos*, there are many that are good, and the subject is well covered.

Prosthetic Dentistry. The interest in prosthetic dentistry is represented in twenty-one articles in the journals named. A revival, we may say, of interest in the topic. In the discussion of this subject, occlusion of the teeth and plans of obtaining correct occlusion have awakened unusual interest, perhaps more than any other point in prosthetic dentistry. Careful attention to the occlusion has given much more satisfaction to patients than was formerly the case. This is a subject that merits the careful study of every dentist, not only those who make their own plates or artificial teeth, but all who have anything to do with this subject.

Among the four hundred or more articles that have appeared in the journals named, a number of those that I would class as miscellaneous are very excellent, nearly all of them relating to some phase of dentistry; some on new instruments, some on new plans adapted to doing this thing or that, to the training of sight and touch, pot-pourri of hints and questions, the adaptation of electricity to annealing and melting, electrical metallurgy in dentistry, the relation of uric acid to disease, and especially to dental diseases, additions to dental medicine, the philosophy of failures of dentistry in particular regions of the world, etc.

I have spoken of the fact that the literary quality of the writing in dentistry has shown an improvement in late years. If we should go back over our literature for eighty-five years we would find that

some of our older writers were able to produce better matter from the literary standpoint than the bulk of those who wrote more recently or in the Sixties or Seventies and along in that period, but since that time there has again been a marked improvement in literary style, which seems to have lasted up to this time, and which we hope will continue in the future. Editors of our dental journals would do well to look after this matter.

I think one of the most notable improvements, however, is in the *illustrative work*. The pictures that have been made within the last ten years are very much better than those made formerly. There is a greater amount of illustrative work done, and it is very much better done than formerly, and I may say that there is no year in which the illustrative work in our dental journals or dental books published was so good as within the year just passed. The interest in this work is very great, and particularly is the interest in the development of photographic work in this line increasing from year to year. During this last year some very fine results have been produced, both in the displaying of histological structure and anatomical structure. The portraying of appliances, particularly of prosthetic crown and bridge work, illustrations of the plans and forming the parts of crowns and bridges in detail, are finely done. Much of this has been done either partially or in full by photography and photo-engraving, and is made to subserve an excellent purpose in illustrative school work in the form of lantern slides. The improvement of this particular line I consider very important and one that will give lasting and very necessary results in the future in dental education.

Discussion. *Dr. C. N. Johnson*, Chicago: There are only two or three points to which I should like to refer. One is in regard to the specialization in dental text-books. We see a great tendency to-day to specialize, not only in periodical literature, but in the dental books. Years ago we had Harris' "Practice and Principles" in a single volume; later we had a work in three volumes, "The American System of Dentistry," then a text-book on dental prosthesis and one on operative dentistry. The tendency now seems to specialize more than that, so we have books on given subjects. It is true that recently there has been a reissue of a book, probably more comprehensive in the list of subjects treated by it than any that has appeared for a long time, entitled "Disease and Injuries of the Human Teeth and their Treatment," by Drs. Smale and Coyle of London.

It contains more than six hundred illustrations, and takes up nearly every phase of the subject of dentistry, so far as the treatment of disease is concerned. However, in doing that I have been impressed with the fact that it is impossible within those bounds to adequately cover any of the subjects, so I am more and more in favor of specialization in dental literature.

Just one word with regard to extremes in practice. Dr. Black mentions the almost total absence from our periodical literature of any mention of methods to save pulps by capping. As he said, it is a subject that some years ago was very warmly discussed, but apparently has dropped out almost completely, and the impression is that the profession to-day is not trying to save pulps. I fear very much that we have gone to an extreme, and in many instances have lost sight, not only in our practice, but in the literature, of the fact that the best service to the patient can frequently be given by an attempt to save the pulps alive.

Another encouraging thing mentioned in the report is the tendency on the part of the medical profession and the laity to give more credit to dentistry as it relates to oral surgery in the treatment of diseases of the mouth. Where surgery is called for, these cases are being more and more turned over to the dentist, and while there has been some complaint in the past that medical men have not recognized the true function of the dental profession, I feel that it is rapidly passing away. The following case recently came to my notice: A physician had referred to him a patient with some disease of the mouth, probably caries, whom another physician had had under treatment for months, and who was very much debilitated. The second physician, who was also a surgeon, referred the patient to a dentist, who gave the opinion that he believed an operation was needed. He was thereupon asked to perform the operation himself, and he did so, with the surgeon looking on. After the operation the surgeon told the patient that if he ever wanted anything done to his mouth he should go to a dentist, and I believe that is the sentiment among the best men in the medical profession to-day.

In regard to the confusion in the treatment of pyorrhea alveolaris, and the diseases that come under this head, if there is anything the dental profession has to censure itself for, it is its utter ignorance in regard to this disease. There is no disease in medicine of which physicians are so ignorant as are dentists of pyorrhea, and we seem to be as ignorant in the essentials of its etiology to-day as we were

ten years ago. We have the theories of different men, but as Dr. Black said, it yet remains for some one to give us from careful investigation a systematic and complete statement of the etiology of the disease and properly classify it.

The report touched in two places on the preparation of papers for the journals, and the function of the editor in editing those papers. As an editor, I want to say that in my experience I have never come in contact with a body of men so utterly irresponsible and careless with regard to the character of matter they turn in to the journals as are dentists. The editor is frequently to blame for mistakes, but if the writers would do only a fraction of their part there would not be one-tenth as much complaint as there now is. Remember, the editor has the absolute right to print what he pleases in his own journal and to change the nomenclature of an article to conform to the journal's style, provided, of course, he does not change the sense or make it ungrammatical. Frequently, we receive papers written by men who apparently have never had an introduction to a grammar. We must take those papers and laboriously straighten them out by practically rewriting the whole thing; then when the papers are published, and we next meet one of the authors, he says: "Really, I had no idea that paper of mine would read so well in print. I dashed it off in a hurry, but it came out all right after all. Guess I'll send you another some day," which makes the editor wish he had never been born—of course, I mean that the editor wishes that he, personally, had never been born.

Dr. C. E. Bentley, Chicago: The logic of this paper seems to sum itself up into the fact that the mechanical side of dentistry has had a great preference over the scientific side. There are many reasons for this, and there are also many reasons why this condition will be reversed. Some years ago it was my pleasure to read before this society a paper on the forecast of coming years, and I predicted at that time that scientific work would occupy a prominent place in our thoughts in the years to come. If the work of Drs. Michaels and Kirk indicates anything, we seem to be upon the threshold of this realization. A tone of pathos comes from the consideration of pyorrhea alveolaris, and Dr. Johnson is correct in his criticism of the profession on this point. The outlook for dental hygiene is encouraging, as the number of papers written shows that this much-neglected subject is now having a sort of universal recognition through the country. One of the hopeful

things, coming from so conservative a man as Dr. Black, is his recognition of the value of porcelain inlay work. It is also significant that he particularly emphasizes the fact that the revival of interest in prosthetic work is centering around that important thing called occlusion, showing that the most essential fact in prosthetic work is that the occlusion shall be based upon scientific principles. I believe that the men now working along that line will give us something of a scientific nature that will bring prosthetic dentistry into the high consideration which it deserves. The most scientific tendency mentioned in the report was that the greatest number of papers have been upon the subject of dental education. This means a great deal to us. It is astounding to think what wonderful progress has been made during the lifetime of all present, and to realize that the physician is required to stay only four years in college, while the dentist must stay an equal number of years to master the knowledge of the ills that occur in only a small part of the body. In some things the East is arrayed against the West. At a recent symposium in the East on porcelain inlays, every man but one endorsed low-fusing body, and at a similar symposium in Chicago every man endorsed high-fusing body. "Extension for prevention" was severely arraigned at a recent symposium in New York, but the West has endorsed that benign method of practice. I cannot understand why the East and West should not agree on these points.

Dr. Geo. W. Cook, Chicago: In reply to Dr. Johnson, there are a number of diseases of which the medical profession is much more ignorant than is the dental profession of pyorrhea alveolaris. This subject hinges upon two points, and the day is not far off when they will be brought out by someone. It is necessary for the growth and development of the science of disease, or the science of a particular disease, that there be a great deal of wandering about the subject and that many methods and remedies be suggested, before it can be clearly elucidated.

Dr. Black, closing discussion: As regards the editing of dental papers, I think the general proposition as stated by Dr. Johnson is fairly correct, although there is danger of carrying it too far. The correction of papers with regard to the literary style should be rigidly exercised, and in some cases it is not exercised strongly enough. The editors have my sympathy on this point, for I know what an immense task it must be to reduce to presentable form

some papers that I have seen. Nevertheless, those papers may contain excellent and important ideas. The authors have thought well enough, but have not put their thoughts into readable language.

EMBRYOLOGY OF THE DENTAL PULP.

R. R. ANDREWS, A.M., D.D.S., CAMBRIDGE, MASS. READ BEFORE SECTION
ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION,
JUNE 10-13, 1902.

I shall consider at this time the dental pulp in its embryologic aspect. Such an aspect appeals to me the more strongly from the fact that I have given special attention in earlier research work to dental embryology. In a general way, I shall consider the growth of the dentin germ from the earliest signs of its development, the formation of the dentin from the germ, and lastly, the fully formed and functionally mature pulp.

At about the end of the second and beginning of the third month of intrauterine life, in the embryonic tissue of the jaw, we shall find the primary specialization of cells which are to form the dentin germ, and from which come the cells which afterwards form the dental pulp. It is in no special zone or layer of this connective tissue that the dental germ is formed, but the formation seems wholly influenced by the contact with an enamel organ. In the presence of this organ the connective tissue cells become stimulated and active. It would appear as though they offered a resistance to its further growth, and from this resistance the enamel organ were made to expand, thus becoming flattened and broadened. The stimulation and activity of the cells is shown by their rapid growth, which clouds the part at this point, becoming a dense focus of new growth. The tissue is seen to be actively building itself up, and this results in the formation of a papilla, around which the enamel organ is growing like a cap or helmet. This process of new growth is a beautiful illustration of anabolic metabolism. The papilla grows to a cusp or cusps, and now becomes the dentin germ. At the end of the third and at the beginning of the fourth month, the dentin germ is rather a homogeneous structure. Round cells are very numerous; they have relatively large nuclei and nucleoli. As the germ assumes the cusp shape, multiplication of cells takes place around the blood vessels, which have grown into the base of the germ, and a jelly-like layer has formed around its outer surface. It will be

found that the dental germ will grow into the depressions of the enamel organ of a bicuspid or molar tooth, and these growths will become the dentin cusps. We also notice that the different layers of the enamel organ are now formed, and that the sacculus is now forming its layers about both enamel organ and dentin germ. When this process is completed these are enclosed in a sac, and thus become a dental follicle. Within the area of the dentin germ are contained all of the cells which shall develop later into the mature dentin, and into the pulp of the fully formed tooth.

The round cells around the rim of the dentin papilla appear to be in a protoplasmic substance, sometimes called a zone of amorphous material. It is a hyalin structure on the outermost surface of the germ. The cells just within become richer in protoplasm, and many processes are seen to be forming from them. They are becoming branched cells, a little later the cells at the surface grow larger and assume a columnar shape which may be caused by mechanical compression. We also see just within this layer of cells some that are pear-shaped, conical, cylindrical and spindle-shaped. There are some authorities who have spoken of what they call elementary cells on the outer layers, and from which they say the odontoblasts are formed, but I have never observed anything but globular masses that are not cells, and which are found in the protoplasmic substance of the rim spoken of above. At the beginning of the fifth month these cells on the surface are seen to be undergoing a histologic differentiation, as stated above, and are becoming specialized or formative cells, the odontoblasts. They are membraneless and little more than masses of protoplasm, which are seen to be filled with great numbers of bright, glistening globules of different sizes. The so-called "conjugation cells" of the German authorities are what I believe to be the pear-shaped fiber-forming cells. These are seen to be sending their processes into the intercellular spaces of the odontoblasts, and thus I believe the fiber to be formed. At this time dentinification is about to begin. How does this process of calcification take place? This we do not wholly understand, nor do we understand the chemical or physical properties of the building materials. At this time the blood supply is evident, and at the seventh month there is a perfect vascular system consisting of arteries, veins and capillary network.

As I have said, the details of the vascular mechanism by which the odontoblasts are supplied with lime necessary to form calcified

structure have not as yet been clearly worked out. Capillaries near the formative cells do not communicate directly with the cells, and must therefore pass the lime through the intracellular substance. The inorganic calcium which is necessary manifestly cannot be supplied as such by the organic formative cells, but must make its initial entrance into the body from without. This entrance in the fetal state must necessarily be through the maternal circulation, and after birth it must come from the food which passes through the alimentary canal. From here it must be carried to the specialized formative cells which superintend the process of dentinification, and there is but one such distributor, the blood supply.

After the absorption of food into the circulation by the intestinal epithelium, chemical analysis of the blood shows the presence of two calcium salts, the insoluble phosphate ($\text{Ca}_3(\text{PO}_4)_2$), and the soluble carbonate ($\text{CaH}_2(\text{CO}_3)_2$). It can be readily understood that the soluble carbonate can be absorbed, but how the insoluble phosphate can be absorbed is still a mooted question. It is believed, however, that it is absorbed in that same loose chemical combination with proteid in which it is found before absorption in the casein of milk and the yolk of egg. Chemical analysis has shown these two foods to be very rich in calcium. The casein and caseinogen of cow's milk, according to Bunge, contains more calcium to the liter than does lime water. Caseinogen, according to Soldner, contains 1.65 to 2.36 per cent of calcium. The proportion of calcium in combination with the proteid of egg-yolk has been found to be about the same.

The loose calcium-proteid combination, arriving during its passage through the dental pulp capillaries within the radius of the special physiologic motive force of the odontoblasts, is acted on by this vital force, and thus becomes ingested by the cells. We believe that it here becomes modified by the cytoplasm of the cell, by a chemical combination with its organic substance, and in this way calcospherites are formed. Within the cells these globules seem to have the property of coalescing, and as they are placed by the cell against the surface to become calcified they are found to be in many cases large globular or irregular-shaped masses. These masses, merging with others, smooth out and form the layer always found between organic and calcified tissues, where the process of calcification is taking place. This is the layer known to investigators as borderland tissue. Hoppe-Seyler asserts that the lime which hardens bone,

dentin and enamel is a double salt of carbonate and phosphate of calcium, having the formula $\text{Ca}_2\text{CO}_3(\text{PO}_4)_2$, one equivalent of calcium carbonate with three equivalents of calcium phosphate.

The various processes of dentinification have been demonstrated to me by many hundreds of sections cut from developing teeth, at a time when calcification was beginning, and from tissue prepared as near the life of the animal as it could be, and prepared with the least possible manipulation consistent with perfect specimens.

The formation of dentin from the dentin germ proceeds substantially in the following manner: We notice that the hyalin substance on the rim of the germ, which is a protoplasmic basis substance that surrounds the outer ends of the formative cells, is filling up with glistening, irregular-shaped masses that appear semisolid, many of them being globular, but all tending to form a layer of substance which is involving a portion of the outer ends of the odontoblasts. We notice that these cells themselves are filling with bright but minute globular bodies, which are the calcospherites, that seem to have their origin within the cytoplasm of the cell; these grow larger, probably by merging with others, as they are conveyed to the calcifying surface of the layer of the rim. Mr. Mummery of London has described a network of connective tissue fibers which was seen in bundles between the odontoblasts, and even enveloping them and passing out from them, forming a network just in advance of the main line of calcification. This network of fibers, the fibers of Mummery, serves during the formation of the layers of dentin matrix as a scaffolding, among which the gelatinous tissue and the calcospherites are deposited. I have described a similar network in developing enamel, in a paper read in Berlin in 1890. In this way the calcifying layers are formed until the dentin is completely calcified. This process is not continuous, but occurs in laminae, as indicated by the contour lines seen in the forming specimens that have been stained. The layer which is forming is a new product in which the lime is held in some sort of a chemical combination. In this condition it is known to be calcoglobulin, and a further chemical change forms it into the fully calcified structure. Thus the dentin is formed, layer by layer and stage by stage. We cut our sections, if we are studying the forming dentin, at a period of growth covering one of these stages, and we do not always get the same picture. Sometimes our section will show the globular formation stage, sometimes in the stage that shows the continuous band of calcoglobulin,

and sometimes, though rarely, we get a picture that shows no appreciable layer between the odontoblasts and the calcified dentin. Suduth has stated that the thickening of the dentinal wall is accomplished by a single layer of odontoblasts which begin the process, and that these same cells persist throughout the life of the pulp. I cannot with my present knowledge agree with this statement, for I have seen earlier layers of odontoblasts being apparently used up or engulfed within the layer forming, and other formative cells developing from the cells of the pulp tissue just within. Oblique sections of forming dentin, and of the layer of borderland tissue, also show parts of the formative cells which have become fused with it. Dr. Frank Abbott makes the statement that he has seen from time to time dentin-forming cells replaced by others which, he says, are seen to be forming at their inner side. The layer of calcoglobulin has been called collagen; I do not believe that it is collagen. It was also formerly known as the "membrana preformativa," but this is not a membrane. The layer of odontoblasts was also known as a membrane, the "membrana eboris;" neither is this a membrane. Morganstern calls the layer of borderland tissue "dentinogenous substance," and thinks that it is produced by the odontoblasts giving up part of their substance, and that a segmentation of the odontoblasts has taken place, somewhat as the enamel rod is formed into segments.

There appears to be a lack of knowledge about the dental fiber, its canal and the so-called sheaths of Neumann. We speak of the dentin tubes, or of the dentin tubuli. A tube is any long and hollow cylinder—a pipe; tube or tubulus is certainly a misnomer. We should speak of it as the dentinal canal or dentinal canaliculus, for a canal is a duct in a body for the passage of fluids, a duct through which anything may be conducted. If we examine the cross section of the developing tooth again, where only a narrow layer of dentin has been formed, we see on the edge of the fully calcified layer, between it and the formative cells, the transparent hyalin layer already spoken of. It is somewhat irregular, as if it were formed by the merging of globular masses, a transitional tissue, mind you, which a further stage in the hardening process will completely calcify. It then becomes matrix or basis substance. It is formed by microscopic globules, calcospherites, within the odontoblasts. These cells appear to superintend the laying of the globules which are arranged in the substance of the gelatinous tissue, a layer of which has been

formed by the pulp to receive them; they are deposited against the fully calcified matrix within the fibers of Mummery. This is the hyalin layer already spoken of. It is a layer of borderland tissue that is singularly indestructible in acids or in caustic alkalies. I have already stated that there appear to be two kinds of cells concerned in the formation of dentin; one, a fiber-forming cell, with a long process running into the canals; the other, a matrix-forming cell, the true odontoblast. This is usually square and abrupt against the dentin, and the process or processes which it appears to have, in many cases I have found belong to the fiber cells deeper within the pulp tissue. As the dentin layer forms, the fiber of the fiber cell lengthens, and against the surface or sides of this lengthening fiber the same hyalin layer is left uncalcified, as is found against the forming matrix next the formative pulp.

We frequently see two fiber cells merged into one, caused by the lessening circumference of the forming dentin; they have merged together, one losing its identity completely at that point, and so it is with the odontoblasts. It appears to me clear that all the branching of the canaliculi must be from the merging of these fiber cells, thus forming branches of the main fiber. The so-called sheath, then, is a transition tissue, probably the same as the tissue which remains uncalcified in the interglobular spaces in dentin. It is in no sense a separate tissue, and sheaths can be demonstrated only after full decalcification, when acids have completely destroyed the matrix. In cross section of the canals in dentin this borderland tissue can be stained by a preparation of nitrate of silver. It acts precisely the same as it does on the hyalin layer of forming dentin; it stains it black. Both tissues are matrix tissues in a partial state of calcification, and full calcification will take place in this borderland tissue against the fiber as age comes on, when the dentinal canals are found to be much smaller in diameter than they are in the young tooth. We may assume, then, that the so-called sheath of Neumann is but a transitional tissue only partially calcified, which may fully calcify in the future. It lines the canals in the dentinal matrix, and is only a sheath when acids have destroyed its adjoining more fully calcified substance.

In these various processes we have considered the calcification of the deciduous central incisor. The process begins about the fourth month, the crown is nearly formed at birth, and the tooth root fully formed at the eighteenth month. Thus far it has been my purpose

to describe the various processes of dentinification taking place before and after birth, as demonstrated by research work. In describing these it has seemed necessary to repeat descriptions in order to make the subject matter clear. In concluding, a brief description of the germ tissue remaining after full calcification has taken place will be given. This germ tissue now becomes the normal pulp, which is the source of nutrition and nerve supply to the tooth. The main mass of this organ is made up of a semigelatinous matrix thickly studded with cells which do not in themselves form a continuous tissue, that is, they are not in contact with each other. They are imbedded in a jelly-like substance, in which many fine fibers are seen. In the center of the pulp tissue the cells are less numerous than they are near the formed dentin. The cells against the dentin are no longer square and abrupt against it. They are now oval or pear-shaped, with the pointed ends conveying a fiber to a canal in the calcified matrix.

The study of many sections of the pulp of fully formed teeth has led me to believe that the pear-shaped cells fringing the outer surface of the pulp, and having fibers running into the canals of the dentin matrix, are not cells having the same functions as had the formative cells, or odontoblasts, which were square and abrupt against dentin while it was forming. There are indications that the pear-shaped fiber cells have a membrane, and they remain pear-shaped throughout the vitality of the pulp. When the pulp is irritated by the approach of caries, or from abrasion, or from some stimulation from without, the fiber cells do not appear to take part in the formation of secondary dentin, the dentin of repair; but new formative cells are seen to be developing from the cells of the so-called conjugation layer just within.

Weil has described an intermediary layer just within the odontoblastic layer, which consists of a large accumulation of spindle-shaped cells, somewhat different from the embryonic connective tissue cells of the main mass, which varies in breadth according to age. This intermediary layer represents the remains of what the Germans call the conjugation cell layer, a layer of reserve material, which seems to be a product of the growth changes of the pulp. I doubt if there is more than a remnant of it in adult teeth. Some authors assert that the cells in the center of the pulp degenerate, that the nucleus disappears, and that there is a partial loss of their protoplasm. This is undoubtedly the case in older pulps which no longer

show the rich ramifications that the younger ones do. Lymphatic vessels have never been demonstrated with certainty in the pulp tissue. There is a network of undulating fibers which run from the root to the crown, parallel to the axis of the tooth. The interspaces between these cells and fibers being filled with a protoplasmic substance, their histologic nature has not been determined. It is stated that the cells of the pulp show characteristic differentiation at different times in its life. There are three kinds of cells which have their origin from the embryonic connective tissue cells by metamorphosis. These are round cells with large nucleus and scanty protoplasm; spindle-shaped cells; and irregularly-shaped cells, which have branching processes that freely anastomose with the spindle-shaped cells and with themselves. The changes in the cells seem to begin at the periphery and proceed toward the center of the pulp. At the periphery we have the pear-shaped cells, then the spindle-shaped conjugation layer of cells, then the spindle-shaped and irregularly-shaped cells with their anastomosing processes, and lastly, the connective tissue elements in the central portion of the pulp, which seem to be scant in protoplasm. These cells are not very numerous and are in a jelly-like matrix. The blood vessels enter at the apex, the trunk vessels resting near the center of the pulp. Sometimes as many as three arteries are seen to enter the apical foramen. They then divide into innumerable branches, and form an extensive network of capillaries near the layer of the pear-shaped cells next the formed dentin. There are numerous veins also found, and these are somewhat larger than the arteries. Black tells us that the blood vessels of the pulp are remarkable for the thinness of their walls, and that the smaller veins seem to be nothing more than endothelial cells which are placed edge on edge, or margin on margin. The arteries have a circular and longitudinal layer of muscular fibers, but these are very thinly distributed. The capillary network is so rich near the pear-shaped cells in the forming tooth that when they are injected and shown under the microscope there seems to be little room for any other tissue. The nerves of the pulp are many, the fibers being medullated and non-medullated, which enter the pulp through the apical foramen in bundles of various sizes. As they pass into the pulp they break into branches and form a rich network, a delicate plexus of fine nerve filaments next the outer pear-shaped cells. It is not known just how these communicate with the fibril. It has been asserted that the finer fibers may pass between the pear-

shaped cells and wind themselves around the dentinal fibrils, passing thus into the canal. Sudduth inclines to the view that the terminal fibers unite with the pear-shaped fiber cells, and that sensation is thus transmitted by the dentinal fibril to the terminal branches of the nerves. In form a mature pulp is shaped nearly the same as the tooth to which it belongs.

ELECTRIC OZONATION IN NEURALGIA.

BY G. LENOX CURTIS, M. D., NEW YORK CITY. READ BEFORE SECTION
ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION,
JUNE 10-13, 1902.

The term neuralgia may be applied to all pains found in animal tissue that may be regarded as being nearly or quite in a perfect physical condition, especially if the pains have become chronic. To designate the locality of the cause of pain, which may or may not be in the region of pain, and leaving out what may be regarded as functional disturbance, we may mention, for illustration of my subject, facial neuralgia, gastralgia, myalgia, as of the pain in myelitis and pyelitis, all of which are only different phases of disturbances called neuralgia. The locality of the keenest pains may be in the parts suggested by those names, or they may be at greater or less distance. Neuralgia in and about the face and mouth is generally easily determined, but there are cases where there seem to be complications.

Other forms of pain, such as gout, rheumatism, sciatica and lumbago, may all come under the general terms of affections of the nerves and may all be treated in connection. But this would open a wider field than I desire to discuss at this time.

The pain about a tooth in one jaw may cause pain in the opposite jaw. It is well known that a defective lower posterior tooth often causes pain in the upper tooth. But it may be said that in cases of pulpitis, gingivitis, periostitis and pericementitis, the pains are found in the parts involved. As these latter forms of neuralgia are probably the ones that will most interest this section of medicine, I will confine my remarks mainly to them. My aim is to call attention to the power of electric ozonation; its effect upon this disease I regard as a comparatively new phase of practice in medicine.

Explanation of the remedial action. After three years of experimental work I called the attention of the medical profession, in

October, 1901, to it in a paper read before the Academy of Medicine in New York. In that paper the plan by which ozone may be properly made, and at the same time enable the practitioner to force it directly into and through the affected parts, was clearly set forth. I also explained its effects and gave report of cases in which the stimulating and ozonizing speedily reestablished the normal functions. When nerve force and proper nutrition are established, and equilibrium is reestablished, a high condition of health is the result. I do not wish to be understood as saying that by electric ozonation a normal physical condition can be reestablished in a diseased organ, such as follows the loss of tubules in chronic nephritis, abscesses of the lungs and liver, or a cicatrix in a nerve trunk following a traumatic lesion or calcaric deposit in the pulp of a tooth. But I do imply that by electric ozonation nerve force and circulation can be sufficiently reestablished in the parts to lead to health, and then be left in the best condition possible under the circumstances.

Method of application. The mechanism that will make this remarkable element is a system of coils of fine wire, so arranged as to change the quality of the current of electricity from the street into the wonderful therapeutic agent. One of the changes in the electric current effected by passing through the machine is increase of voltage, while at the same time the amperage is reduced, thus causing a high tension current. The capacity of this machine is 1,000,000 volts and about 1-50 of an ampere, capable of producing a large amount of ozone. The higher the voltage and the lower the amperage, the less is the degree of shock experienced by the patient. It reestablishes nervous functional activity, thus stimulating tissue repair. The current from this machine, which seemingly has but a single pole, passes through the body and then escapes into the atmosphere, which may be regarded as a negative pole.

Among the advantages of this machine is easy handling, that is, it is easily carried about when traveling. The fact that it may be used wherever there is an incandescent current, without its being affected by conditions of the weather, is an important virtue.

Reflex neuralgias. Removing the cause of neuralgia generally stops pain; for illustration, the removing of a pulpstone, necrosed bone, an irritating filling, gas in pulp chamber or alveolar abscess pressure; but there are cases that require the element of greater length of time, before unanimity is established, and electric ozonation tends to shorten this time.

Among other disturbances of the nervous system that may be mentioned are those that cause hemiplegia and catalepsy; but association with other disturbances sometimes embarrass diagnosis. I recall a case of hemiplegia supposed to be from brain lesion that was completely dissipated after the removal of an alveolar abscess. I also recall a case of catalepsy, from the same cause. Slight irritation may not cause neuralgia, when vital force is at par, but when vitality is low, neuralgia in most any part of the system may continue and lead to neurasthenia.

Neuralgia from asthenia. While investigating the cause of pain, for the purpose of giving relief, the practitioner generally believes that the pain is the result of a lesion. Should lesion not be found, I think that the practitioner should never operate for relief until a careful and exhaustive examination of the patient's system is made and he has ascertained the full conditions of health. This examination may show that the patient is in a very debilitated condition, and the vitality so low that there is not sufficient supply of nerve force for a high condition of health. Under such circumstances the overworked and inflamed nervous system needs assistance, and as pain is nature's voice calling for help, it may be regarded a blessing in disguise.

Illustrative cases. To illustrate the importance of making careful diagnosis, and to show how we may help nature, I will present two cases recently in my practice, one in which a lesion was determined, the other in which a lack of vital force was the cause of the pain. Mr. I., aged 80, had suffered for twenty-five years from facial neuralgia of a very acute character. All his teeth, one after another, had been extracted, without giving any abatement of the excruciating agony. Under these conditions his health gradually failed, and the paroxysms of pain became more and more intense until continued agony made his life hardly worth preserving. This was his condition when brought to me by his physician for consultation, regarding advisability of resection of the lower dental nerve. On a careful examination I found that his nervous system was in a very feeble condition, and with its present capabilities would not generate enough nerve force to furnish half the vitality necessary for even a moderate condition of health. It was clear to me that his nervous system must be awakened and made more vigorous before improvement could be seen. I suggested a course of ozonation, and the advice was acted on. After two weeks of daily ozonation his general

health had improved to a marked degree, and with this change rapidly came the gratifying result—entire freedom from pain. This ozonation treatment was continued two weeks longer, when sound health was firmly established. This highly satisfactory condition lasted a year, when the death of a dear member of his family caused him great sorrow, and necessitated a long and fatiguing journey by railroad. The grief and journey combined so exhausted his vitality that neuralgic pain was again felt in full force. He came to me again for treatment and was treated by the same method, and was again restored to vigorous health. He now continues to live and enjoy life free from pain.

Another case was that of Mrs. E., who had for twelve years before I saw her been subject to long periods of suffering from neuralgia in one side of the face. She had, one at a time, all the molars extracted without gaining relief. During the examination I asked her what had been the condition of her general health. She replied that her "health was good," but her nervous, anxious expression contradicted her assertion, and showed clearly the irritable state of her system. I continued my examination and concluded the cause to be pulp stones in the upper bicuspid of the affected side, and advised the removal of the pulps, or possibly extraction of the teeth. I found her vitality very low, none of the functions of her organs performing regularly, thus showing that a patient's word cannot always be relied on in such matters. In no sense was she a well woman. She would not consent to surgical treatment that seemed proper, but after the ozone treatment was suggested she concluded to accept it. After the second treatment all signs of pain in the parts disappeared, and after a month of treatment her general health was seemingly entirely restored, and for two months she was free from pain. But later contracting a violent cold, and the bicuspid becoming troublesome, with slight paroxysms of pain, she again came to me for relief. After several ozone treatments all pain disappeared. When last I saw her she was in good health, and had no returns of the neuralgia. I believe, however, that until the pulp stones are removed she will occasionally have a recurrence of the pains when her vitality runs low. I may mention that previous to the time she came to me she was considering the resection of the Gasserian ganglion.

I have observed similar results in other cases.

Discussion. *Dr. J. L. Williams*, Boston: What is the process of ozone treatment?

Dr. Curtis: Briefly stated, the treatment consists of forcing the ozone into and through the body by means of Geisler vacuum tubes. These tubes are of various shapes and adapted to the parts to be treated. The ozone, which I believe is electricity, as it passes through the body oxidizes the pathogenic conditions not only in the tissues, but in the blood. It reestablishes circulation in a congested part and promotes nutrition, so that the blood is very quickly purified and new blood rapidly generated.

Dr. Bogue: Is not ozone produced by the atmosphere?

Dr. Curtis: One of the principal elements of the atmosphere is ozone. Nascent ozone is said to be produced by a strong current of electricity coming in contact with the atmosphere, breaking up the molecules of oxygen, thus liberating the ozone.

Dr. G. F. Eames, Boston: I have always understood that ozone, an excess of oxygen, is produced by the electric current acting on the atmosphere, and it is easy to see how it may be taken into the lungs by inhalation, and thence into the blood and to all the tissues through which it circulates, but it has not been proven to me that the ozone passes directly through all the tissues of the body.

Dr. Curtis: My reasons for believing that ozone passes into and through the body lies in the fact that where there is deep-seated congestion, such as in meningitis, pulmonary and hepatic inflammations, or in abdominal tumors, pain is felt in these parts when the electrode is placed over them, and it is not noticeable when these parts are normal. After several treatments and the inflammation has subsided, no pain is realized. Again, when the electrode is placed over the lungs the patient will taste the ozone in a few seconds, and after the usual treatment, which lasts about half an hour, the odor of ozone may be detected on the breath for some time, and it is especially noticeable on the skin where the electrode has been applied.

Dr. William Knight, Cincinnati: We all know the stubborn character of real neuralgia and that it shows a condition of the nerve which is not normal. Innumerable methods have been adopted in their time, and in special cases are of service to-day. The object of all methods is first to remove the local irritation and then correct the systemic predisposing condition. I would hesitate to believe that pain due to inflammation, to bacterial origin, or pain of a neuralgic character, is to be suddenly wafted away by something that is called ozone. But if we have a method which can

cure this terrible disease of neuralgia so readily it is a grand thing, and I would compliment any gentleman who has made such a discovery. Up to the present time the condition has often baffled the ingenuity, research and clinical observation of men in this country and abroad.

Dr. Curtis (in closing): It has been proved that ozonation will quickly alleviate pain, improve the circulation and reproduce nutrition and vitality. You will readily understand by this that it is equally effective in the treatment of many other diseases, and it is surprising to see how quickly a patient will recover. A patient who was recently treated for tuberculous meningitis was relieved of a severe toothache which had continued for two months (for which there was no apparent cause) after the second treatment. When the electrode was first applied to the head the pain was intense. This gradually subsided.

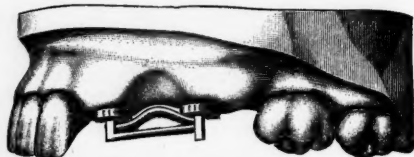
PARAFFIN SUBSTITUTION.—The latest marvel in surgery is the filling out of defective organs by the injection of a vaselin-paraffin compound under the skin. In this way noses that have been broken in, chins from which a portion of the jaw-bone has been removed, and similar features may be filled out. The bodily tissues invade the injected compound, and a hard body similar to cartilage is formed.

JAVANESE METHOD OF NARCOSIS.—L. Steiner describes in the *Arch. f. Schiffs- u. Tropen-Hygiene*, v. 12, a method of narcosis which has been long practiced in Java. The hands are placed on the neck of the subject, the fingers meeting at the back, and the carotid artery is briefly compressed with the thumbs, back of and a trifle below the lower jaw. The artery is pressed back toward the spine. Only 5 out of 30 subjects failed to respond to his application of this maneuver. The head falls back and the subject seems to be in a profound slumber, from which he awakes in a few minutes as if suddenly aroused. The effect can not be due to suggestion, as the same maneuver avoiding the arteries fails to produce any effect. The procedure is called by a Javanese term which signifies "compression of the sleep vessel." The popular name for the carotid artery in Russian, by the way, is also the "sleep artery;" and "carotid" is derived from the Greek *karos*, sleep. He has never witnessed or heard of any accidents from this method of narcosis, which is widely practiced on the island, frequently associated with general massage. The patients do not vomit, and there is no incontinence of urine or feces. He opened an inguinal abscess in one case while the patient was unconscious. He is inclined to advocate this absolutely harmless method of narcosis as worthy of a place in surgery, on account of the rapidity with which it can be accomplished and the rapid awakening. The procedure may also prove effective in combating cephalalgia, vertigo and insomnia.

Digests.

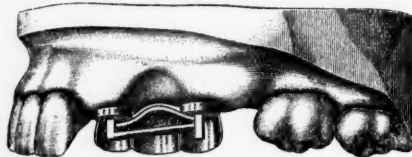
PORCELAIN BRIDGEWORK. By George W. Schwartz, D.D.S., Chicago. Presented at clinic of New York Odontological Society, January 21, 1902. In presenting this case of porcelain

FIG. 1.



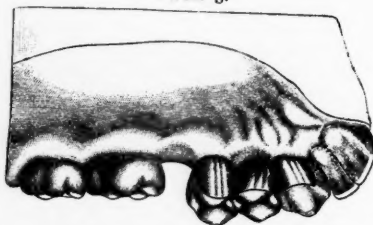
bridgework, my object is to show a recent improvement in a method I introduced to the profession some years ago. Originally I constructed the metal work as shown in Fig. 1. In a few cases where

FIG. 2.



the occlusion was very close some of the inner cusps were broken away by the force of mastication. To overcome this I began soldering backings to the metal work, as shown in Fig. 2. This is the

FIG. 3.



improvement, and I feel safe in recommending it to porcelain workers. This is a bridge without a saddle, and does not produce irritation at the interproximal spaces of the abutments.

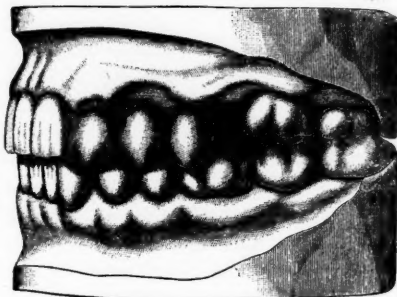
Brief Description of the Bridge.

The bands for the abutments are 29-gauge platinum plate.

The caps are 29-gauge iridio-platinum plate.

The posts are heavy square iridio-platinum wire.

FIG. 4.



The cross bars are heavy round iridio-platinum wire.

Twenty-five per cent platinum solder was used throughout.

The backings are 29-gauge platinum plate.—*Cosmos*, July, 1902.

ARTIFICIAL DENTURES, WITH SPECIAL RELATION TO THE IMPRESSION, TAKING THE BITE, AND ARTICULATION. By Rodrigues Ottolengui, M.D.S., New York. Read before the Northeastern Dental Association, October 30, 1901. Unlike some of the lower forms of animal life, man is not endowed with the ability, physically, to reproduce lost parts. His genius, however, has enabled him to mechanically produce substitutes which more or less restore him to normal comfort. Of these mechanical substitutes I know of none of which so much is expected as of artificial dentures. No other is supposed to fully perform all the functions of the original. Artificial eyes, ears or noses are merely cosmetic appendages restoring outward physical proportions. Artificial limbs, or parts of limbs, perform normal functions as well, but only in a very limited degree. With an artificial denture, on the contrary, the patient expects to eat, talk, taste, smile and look pretty—in short, to do everything that he has been able to accomplish with his natural teeth. It is a high tribute to the progress of dentistry, therefore, that we have among us so many masters of the art that it has

become a notorious and well-advertised fact that many so easily overcome the obstacles that they can afford to furnish full upper and under sets of teeth for about ten dollars—yea, and guarantee the result.

In spite of the existence everywhere of this superabundance of extreme skill, I believe there are yet a few problems which even the most skillful among us stand ready to discuss, and the object of this paper is to bring before you three of these problems.

Taking the Impression. We would perhaps all agree that a perfect impression is a *sine qua non*. Yet I ask the simple question, What is meant by a perfect impression? and discussion is at once opened. A perfect impression, and from such impression a perfect model of a mouth, in which all teeth are present, should be obtainable by all entitled to call themselves dentists. Yet we see few of them. But this belongs to orthodontia rather than to prosthodontia. The realm of the latter is entered, however, as soon as even one tooth is lost which we are called upon to supply. This will usually be the simplest task for the prosthodontist, the difficulty increasing with the number of teeth absent from the arch, until we come to the edentulous jaw. When you think of jaws in which are to be found a few teeth only, and these leaning toward each other as though seeking companionship in their increasing loneliness, you may be inclined to question my last statement. I am expressing only a personal opinion, and in a moment shall support the assertion with my reasons.

I use plaster of Paris for all classes of impressions with absolutely no exceptions. Where only a few teeth are absent, or where all have been lost, the impression tray is utilized. Often, where but a few teeth remain it is best to dispense with a tray of any kind. In such cases the plaster is introduced with a silver-plated table knife and pressed and held in position with the fingers. This rule is peculiarly applicable in the lower jaw when the tongue is incorrigible. I have said that I use plaster exclusively. A good rule reads: "In proportion as it would be difficult to remove an impression, plaster of Paris becomes needful." Teeth which lean toward one another cannot be reproduced with anything but a material which fractures sharply, an attribute not possessed by modeling compound or wax. Where only a part of the whole number of teeth has been lost, the point to be observed in making a model is the perfection of the form of the teeth themselves. Accuracy in

relation to the soft parts will usually be attained without special effort.

This, however, is far from true in an edentulous mouth where we are dealing exclusively with soft tissue, or with soft tissues overlying hard tissues in differing proportions. Were the edentulous jaw equally hard throughout its entire extent of surface, the taking of an impression and making of an accurate model would be simple enough. We would but need to fill a tray with plaster mixed to a creamy consistence, apply it carefully and without pressure, and allow the plaster to set. The resulting impression would give an accurate model, from the standpoint of an anatomist. Often such a model will but lead the prosthodontist to failure, and a failure which too often he cannot comprehend. Why?

Speaking now of the upper jaw, the one requisite in a set of teeth more than all else demanded by the patient is that they should "stay up." Now it has been the sad experience of dentists that the mere fitting of a plate over an accurate reproduction of the surface of the maxilla does not invariably yield a plate that will stay in position. For this reason the prosthodontist resorts to various alterations in his models, some declaring a suction chamber to be necessary, while others loudly declaim against this course, but resort to relief chambers produced by the application of layers of metal over the harder parts of the mouth. Others favor scraping the heel or part of the model along which is to lie the back border of the plate. Still others produce raised lines, more especially in vulcanite work. I know of none who feels that he can rely upon merely fitting a plate over an anatomically accurate model.

If, then, alteration from the really accurate model is necessary, let us for a moment inquire as to the means of accomplishing this, and then ask ourselves whether anything can be gained in this direction by the method of taking the impression. The roof of the mouth being supplied with soft tissues of differing thickness, and adhering with different degrees of firmness to the underlying bones, experience has taught that a perfectly-fitting plate, because of the yielding of the softer parts, will finally rest and rock upon the harder tissues, thus producing movement which destroys the retentive quality, whether it be suction or adhesion. It happens that the harder places are usually along the central area, so that those opposed to suction chambers declare that alleged success with them is due to their acting as relief chambers, and that they are unneces-

sarily deep. If we admit this claim, we still find ourselves in a difficult situation. It is by no means a simple problem to so arrange the layers of relief metal that the plate, when completed, will press equally at all places. It is largely a matter of judgment and skill, and those who declaim loudest against suction chambers, having the skill to succeed without them, seem utterly unaware of the fact that they enjoy a dexterity possessed by few men.

Can we then at the time of taking the impression produce a model which will be more nearly the desideratum of the prosthetic worker than most of us do at present, and thus reduce the degree of skill needed to equalize the pressure of our plate after construction? I have within the past three years been applying myself to this problem, and I think the result has been sufficient to warrant my communicating it to my *confrères*. I have said that plaster of a creamy consistence will yield an anatomically accurate replica of the parts with which it is placed in contact without pressure. In a mouth where there is a considerable difference in the resistance of the soft tissues I have been taking impressions in the following manner: The plaster is sufficiently salted to insure quick setting. It is mixed comparatively thin, and stirred continuously in the cup until it noticeably begins to stiffen. It is then placed in the tray, and when quite stiff passed to the mouth. It is quickly carried to position, over the posterior parts first, and then pushed to place forcibly, force being directed upward and anteriorly. This force, together with the stiffness of the plaster, compresses the softer parts of the tissues of the vault—so much so, indeed, that a very trifling relief vacuum over the hardest places will give us a plate resting firmly in position. By this method some skill and rapid dexterity will be needed to obtain a good impression of the labial and buccal aspects of the ridge. If a combination gold plate with rubber attachment is to be made, this need receive no special attention, as the gold plate need not be brought forward farther over the ridge than will be shown in the impression, and a subsequent impression taken in the ordinary way with the gold plate in position will give the ridge over which the vulcanite is to rest. Where the plate is to be made of vulcanite, after pressing the impression tray to place, the left hand may firmly continue the upward forward pressure, while the fingers of right hand first force the plaster under lip, and then drawing lip over plaster exert pressure on the outside of lip, which will insure an impression of the ridge. Another method is as follows: Just

after transferring the plaster to the tray, quickly take up some plaster on the knife and smear it along the buccal and labial surfaces of the ridge. By this time the plaster in the tray will be firm enough for the class of impression here advocated.

Perhaps if I recite an extreme case it will be instructive. A gentleman applied to me for an upper denture on vulcanite, complaining that none that he had had enabled him to eat, nor would any of them "stay up." Examination showed that the slightest pressure anywhere along the ridge tipped the plate, this being especially true in the incisive region. The plate bore evidence of careful, conscientious workmanship. It had a suction chamber, properly placed, according to rule. Examination of the maxilla showed entire absorption of the bone in the intermaxillary region, the ridge though well defined being nothing but a mass of extremely soft tissue, readily moved into quite different positions. In taking this impression I used the knife, first placing a plentiful supply of plaster along the buccal and labial surfaces of the ridge. By this time the plaster in the tray was setting rapidly and was quite stiff. I placed the tray in the mouth, pushing it up at the back first and then forward and upward, exerting great pressure with both hands. The plaster in the tray of course united with that in the mouth, and the resulting model was accurate in all parts from the viewpoint of the prosthodontist. In the incisive region, however, the ridge was pushed forward abnormally, and this was carefully scraped off little by little, in order to retain the general shape, the scraping continuing until the labial outline conformed to the general curve of the other parts of the ridge. From this impression two models were made. Over one a plate was vulcanized having a suction chamber. On the other a single layer of heavy tinfoil was laid, extending over the entire surface of the harder parts. On the model so treated another vulcanite plate was made. Both of these plates, of course, carried no teeth. When tried in the mouth I could observe no advantage of one over the other. I therefore used the one having only the relief chamber, and mounted the teeth so that in the incisive region there should be no overbite of any consequence. With this plate the patient was enabled to incise and chew his food and the adhesion was good. I consider that the chief obstacle in this case was overcome by the means employed in taking the impression, the plate acting so as to exert such compression as to solidify the soft, I might even say flabby, tissues in the anterior region.

Taking the Bite. Next in importance to the model is the accuracy of what we call the bite. To a lay mind this would seem a simple procedure, yet the dentist is rare who has any degree of confidence in his own skill in this procedure, and dentists are not especially lacking in self-appreciation. The proof is to be found in the fact that it is common practice to try in the teeth. I think that every time a dentist tries in a set of teeth, after mounting and prior to completion, he tacitly admits that he doubts the accuracy of his bite. I remember that one gentleman replied to this assertion of mine by stating that he tries in a set to be sure of his cosmetic effects, but when I asked him, "Do you never find it necessary to alter the position of the teeth because of faulty occlusion?" he laughed and turned away. I will admit that in a few instances it may be wise to see the teeth in the mouth in order to be sure that the arrangement will suit the physiognomy, but that is not the kind of trying in to which I allude when I say that the man who tries in all sets of teeth before finishing them has no faith in the accuracy of his bite.

What engenders this almost universal lack of faith in one's own skill? If we discuss but a few moments the action of the patient, compared with the dentist's methods, I think the mystery will pass. The action of the mandible is not a mere up-and-down motion from fixed hinges, the movement being in a fixed arc; on the contrary, the mandible describes a more or less complex movement, including forward and lateral motion. The two important acts of the mandible bearing relation to the taking of the bite are, first, the more or less involuntary act of simple closure of the mouth, when commonly the mandible will assume its most posterior pose; second, the always voluntary movement which accomplishes incision, and which brings the mandible into a forward pose. It is so true that this is the voluntary closure, that almost all persons who close the mouth upon request bring the mandible forward. This is as true of those who have teeth as of those who have none. If the mere request of a patient "to close the mouth" results in this conscious forward movement of the mandible, how much more true will it be that he will assume the forward pose if asked to bite through wax or other material? He is thus told to incise something, and naturally the mandible assumes the incising action. How then is the bite to be obtained with certainty that the mandible will be in the involuntary rather than in the voluntary pose?

If a gold plate is to be made, of course it is used as the basis in taking the bite. In vulcanite work I like to make the plate first, and attach the teeth subsequently, in which case it can be used in the same manner as the gold. But any base plate can be used on which to build up a biting surface with modeling compound, or the compound may be used alone. In any event a ridge of modeling compound is built upon the base plate, and chilled with cold water. It is then carried to the mouth, and a sharp knife is used for trimming away all surfaces until a neatly formed plate and ridge are produced, which can be placed in the mouth without distorting the lips or cheeks. The comfort of the muscles will render the patient much more tractable. The biting surface is next trimmed away bit by bit until every tooth of the opposing jaw touches the surface of the modeling compound at the same time, the length or opening of the bite being as desired. It will be observed that now, while all the teeth touch the modeling compound, there is no incision—that is, the patient bites nothing. It will therefore not be difficult to have him bite with the mandible properly posed. This accomplished, the modeling compound is to be marked with a sharp instrument along the labial surfaces of the opposing incisors where they come in contact. This will be a guide to accuracy. Next a very thin film of wax is melted upon the modeling compound in the molar and bicuspid region on one side only. Thus the first act of actual biting is through a very thin layer of material, and being at the back of the mouth there is little effort to move the mandible forward. At any rate the mark on the compound in the incisive region will be a guide to determine the matter. This step will produce but a mere imprint of the cusps of the molars and bicuspid on that side, and is next repeated for the opposite side. Then by slow stages more and more wax is added in these posterior regions until a perfect imprint of the occluding surfaces of all the molars and bicuspid shall have been obtained, all the while nothing having been placed in the incisive region for the patient to bite into.

From this point the procedure varies. The best method is to take an impression of the opposite jaw and set the model into the imprints on the bite, and thus arrange the bite in the articulator. If the dentist does not wish to do this, soft wax may next be placed in the incisive region, the imprints in the posterior regions now acting to guide the jaws, which are closed slowly. Even now

we have nothing but the imprints of the occlusal surfaces of the teeth. The jaws are kept close and wax is molded around the buccal and labial surfaces and pressed tightly to the modeling compound. The whole is then chilled with a jet of cold water and removed carefully. The bite when poured will give an accurate view of the opposing teeth except at the palatal aspects, but provided the imprints of the occlusal surfaces are deep enough for articulation, this will be an advantage rather than otherwise, as the plaster teeth will be stronger for the support at that side. In extreme cases, where even the film of wax disturbs the act of the patient in biting, plaster of Paris may be used instead of wax for the molar and bicuspid imprints. Then a model of the opposing jaw must be obtained.

The above directions are, of course, for patients who have teeth in at least one jaw. Where all the teeth are missing I know of nothing requiring more skill than to construct sets of teeth for both jaws which shall occlude properly. The best method is to prepare a base plate and biting plane for the upper jaw, trimming to approximately proper length of the teeth to be set. Then prepare a similar one for the lower jaw, wax the two together, place in the articulator, set up the teeth of lower jaw and make the lower set. Then proceed with the upper as though the lower were natural teeth. There are other reasons why the lower set should be completed first, rather than to attempt to set up two sets coincidently; but this will be considered when discussing articulation.

Articulation. I think I recall the very first paper which Dr. Bonwill read in enunciation of his philosophy of articulation. I recall that the men in the room were terribly bored, and that many left before the reading was over. The paper was unconscionably long, and for that reason was not published at the time. It has taken nearly twenty years to awaken any great interest in this subject, but to-day there are signs which indicate that the old methods of setting up teeth are to pass, and, practically, the Bonwill method to have sway.

The old articulator allows for nothing except a simple hinge action, and teeth set with such an appliance, even though they articulate as do the teeth of engaging cog-wheels, cannot be expected to be serviceable in mastication. If those who have never used one of the two anatomical articulators, the Bonwill or the Gritman, would obtain one and set up a full upper and under denture, using the new as they have the old articulators, that is to say, utilizing the hinge action

only, a very instructive lesson might be learned. Both sets having been articulated according to the old methods, let the experimenter move the lower set to one side as far as the articulator will permit, and he will immediately discover why so many complaints have reached him in regard both to faulty mastication and to lack of stability. More than probably he will find that in closing with this lateral action at its extreme, the cuspids will be the only two teeth in antagonism, which fact would easily explain a tipping of one or both dentures. Let him then begin grinding, tooth by tooth, with small stones until he obtains good occlusion during all motions of the jaw, and in the end I venture to say that from this single experiment with an anatomical articulator he will have learned more than from all his previous experiences with patients.

I recommend that, when constructing a full denture, the lower should be made first, because it greatly facilitates the grinding necessary to perfect the occlusion, if the teeth of the lower set are so fixed that they can be ground without removal from the articulator. It is the lower jaw which moves, and for this reason, and because the overbite is in the upper jaw, the lower set will require the most grinding.

There is practically no set of teeth made by any manufacturer which can be properly occluded without considerable grinding, and this brings me to an intensely interesting fact. Let any one carefully occlude a full upper and lower denture on a Bonwill or Gritman articulator, and when completed he will discover that their appearance is twenty-fold more natural than any work he has ever before done. It is not often that patients require teeth at an age when their own organs would have been of normal dimensions; therefore it is not strange to find that almost invariably in perfecting the occlusion the cusps of the cuspids must be materially shortened. The incising edges of the incisors will all need grinding. The inner cusps of the upper first bicusps and the buccal cusps of the lower will likewise need shortening. The other changes are mainly to be made in accordance with the requirements of the case in hand. Here I may mention another advantage in vulcanite work, of vulcanizing the plate first without teeth. By this means the entire work of grinding for occlusion need not be done when setting up the teeth. The greater portion, of course, should be done to avoid error. Having the vulcanite plate already made, the central incisors may be waxed to it, and then lateral motion of the articulator made. This will indicate

just how the cusps of the upper and lower centrals must be ground so as to properly occlude during all movements. The upper centrals are then firmly attached with hard wax. The laterals are next added and ground to occlusion in same manner, and so on throughout the arch. Some slight discrepancies may be observable, but the teeth may be attached to the base by a second vulcanization, after which the set may be returned to the articulator, as it is not necessary to remove or destroy the plaster cast. Thus we have both sets on the articulator in their original positions, and with small stones the grinding for occlusion may be brought to final perfection.

One word about articulation in relation to stability. I think many sets fail because the dentist endeavors to make his patient look young again. Not only is a person's age no disgrace, but in regard to teeth their falsity will be only the more apparent as the result of any effort toward rejuvenating effects. In an edentulous mouth there is little doubt that the arches are smaller than when supporting the natural organs. If the artificial substitutes be made to imitate the original arches, the teeth necessarily must be set outside the ridge, and this produces a leverage which largely accounts for the tipping of many plates. Set the teeth as directly over the underlying ridge as possible, even if you must depart somewhat from the ideal. By this means the plate will be more satisfactory because of greater stability in conversation and mastication. Moreover, a patient will be more comfortable than with teeth set on a larger arch.—*Cosmos, May, 1902.*

PERFECT FITTING DENTAL CLASP. By G. W. Pitts, D.D.S., Chicago. The practice of constructing dental clasps is one which has been in use for a long time, and one which has caused no end of trouble to both patient and operator, and eventually the loss of a great many teeth which in the beginning seemed too good to sacrifice and crown. This is due to ill-fitting clasps constructed according to the method generally in use to-day. There is, however, a clasp recommended by the late Dr. Bonwill which should be more generally used, and would to a great extent do away with the denuding or wearing away of tooth surfaces by the upward and downward excursions of the clasp upon the tooth. The clasp referred to is the one with the lug extending over the occlusal surface, which prevents to a degree these movements.

There are, however, other things which are to be taken into con-

sideration as reasons why we should not too freely use clasps to retain partial dentures, viz.: That it is impossible to make a clasp either by forming it to zinc or metal dies which will be of sufficient strength to accomplish the result desired, and accurately fit all surfaces of its retainer. The difficulty encountered is that a clasp metal of over twenty-six gauge is so stiff and rigid that it is worked with the greatest difficulty, and when finished is usually very unsatisfactory in adaptation, and also that a clasp made of twenty-six gauge standard clasp metal is not of sufficient strength to make a clasp which will stand the force applied to it, and keep its shape and position.

A clasp which will fit accurately and give sufficient strength under all circumstances may be constructed by the following method: First, take an impression of the tooth for which you intend to construct clasp. Treat in usual way, and fill with investment compound for model. By adding a little whiting or prepared chalk to investment, one can acquire a great deal smoother model, a thing which is much desired at this point. About the tooth form burnish a very thin piece of platinum about the shape you intend to have clasp when completed, leaving it flush and extending well into the sulci. Wax securely, and fit approximately over it clasp metal thirty gauge. When it fits to your satisfaction run melted wax between platinum and clasp metal, allow to cool, and invest model platinum matrix and clasp metal. When investment has hardened, remove wax with hot water and heat case until all moisture has evaporated. To complete, flow twenty carat solder between platinum and clasp metal. Finish in the usual way.—*Review, June, 1902.*

LOCALIZED AND REFLEX APICAL PERICEMENTITIS
DUE TO SEPTIC INFECTION OF A PULP. By Otto E. Inglis, D.D.S., Philadelphia. In a previous article the writer mentioned a case in which arterial hyperemia of the pulp of a right upper bicuspid attended by the usual response to thermal changes was due to the inflammation of the pulp of a right upper third molar. The pulp of the third molar was found partly dead, and the devitalization of the canal filaments relieved the condition in the pulp of the bicuspid.

In a case recently presented a young lady related that the right lower first molar had been crowned two years before, and up to within two weeks had been comfortable. Trouble seemed to imme-

diately follow the filling by her former dentist of a large mesio-occlusal cavity in the right lower second molar with amalgam. Both the first and second molar simultaneously became more and more sore until the annoyance was constant and mastication upon the right side unbearable. The response to both intense heat and cold was delayed in both teeth. The tenderness upon percussion was about the same in each tooth, and the third molar and second bicuspid were each somewhat irritated pericementally. Differentiation seeming impossible, a drill and bur were used to perforate the amalgam filling and to expose the dentin in the neighborhood of the pulp horn of the second molar. Some slight sensitivity was noted and the drilling stopped and the patient closely questioned. As she averred a knowledge of a new sensation, ethyl chlorid was again tried and a response more pronounced than at first obtained. As this seemed to exclude the second molar, the gold crown was removed from the first molar and the discovery made that the cement which secured it to the tooth was in direct contact with dentin which should overlie the pulp horn. Thermal test produced a somewhat delayed response. The location of the horn was explored with a drill, which entered the pulp cavity without pain or particular evidence of pus. The condition was apparently that of a decomposed or gangrenous pulp mass. Exploration of the canals discovered vitality in each of the pulp filaments at locations corresponding to the entrance of the canals. The pulp cavity was slightly enlarged and syringed out. A thread of cotton saturated with phenol-camphor, to which menthol had been added, was loosely placed against the vital remnants of the pulp with a view to their sedation and sterilization. This was covered with cotton and sandarac. The opening in the amalgam filling in the second molar was now refilled and the case dismissed. After a short time (not over an hour) all tenderness had disappeared from both molars, which could be freely tapped after twenty-four hours. Arsenic was now applied to the first molar pulp filaments.

This case seems to have differed from the first described in that the reflex hyperemia was produced in the pericementum instead of the pulp, while the causes in the two cases were as nearly alike in character and extent as one could judge from a clinical experience with them.

Such cases seem to prove beyond all peradventure that the dental pulp is capable of producing a reflex hyperemia in the pulps of other

teeth and in the pericementum of its own tooth and of another tooth. This being the case, the reference of apical pericementitis following arsenical applications to the arsenic, and of that following death of the pulp from abscess or confinement of gases during suppuration of the pulp to direct action of microorganisms upon the apical tissues must be regarded as at least possibly erroneous. In the case of the arsenical application a slight apical pericementitis often follows the application, but subsides upon treatment purely external to the tooth and without removal of the arsenic. Again, it is noted that in suppuration of the pulp such irritation as follows the stasis in the pulp has a tendency to subside, even when untreated. The writer argues that in both cases the condition is as purely a reflex as is the establishment of arterial hyperemia of the pulp with its concomitant symptoms as the result of hyperemia of the apical tissues produced by a blow of moderate severity.—*Stomatologist*.

PACKING AMALGAM IN CAVITIES IN THE BUCCAL SURFACE. By E. K. Wedelstaedt, D.D.S., St. Paul. Let us take a practical case. Suppose we have a cavity in the buccal surface of a lower right second molar, which involves the gingival three-fifths of the crown. The rubber dam has been adjusted prior to the preparation. The cavity is ready for the filling material. For various reasons it is decided to use a quick-setting amalgam. Before mixing the alloy with mercury the amalgam pluggers should be taken from their place and fitted to the cavity. The largest plugger that will conveniently enter the cavity should be selected as the instrument with which to pack the amalgam. Now mix the alloy with mercury. Knead it thoroughly, and when it is in workable condition place the largest mass that can be advantageously handled into the cavity and compress it, using considerable force while so doing. This first mass of amalgam should, after being compressed, fill the cavity about one-third. Add another large mass of amalgam and compress it. Continue adding amalgam and compressing it with about all the strength possible until the cavity is overfull. Should the cavity be about three millimeters gingivocclusally by five millimeters mesio-distally, take an amalgam plugger six millimeters in diameter and send the entire mass of amalgam home. Do not be afraid to use all the force you can exert. Then let the filling alone until it has fully hardened. Do not use a burnisher to "pat it down," for as the burnisher is drawn across

the amalgam from distal to mesial the amalgam creeps from the distal cavity margin. If a burnisher must be used, burnish toward the distal margin, beginning on the amalgam some distance from that margin. Then place an instrument on that portion of the amalgam burnished to hold it in place while the burnisher is being used on other portions of the amalgam. It is better, however, not to use a burnisher. Not more than two or three minutes should elapse after the final condensation before the amalgam should be hard. (The majority of quick-setting amalgams take too long a time to set. There should be an extra quick-setting amalgam, say one that would set in three minutes after being mixed. A number of practitioners need such an article.) As soon as the amalgam is hard it should be dressed and trimmed, using the Black trimmers and knives. Trim the amalgam from the center toward the margin. It is seldom or never necessary to trim from the margin toward the center. The more perfect the trimming at this time the less work remains to be done when the final polish is given the filling.

Now just one word regarding the finishing of fillings. It is just as essential that an amalgam filling should be trimmed and polished as it is that the cavity in the tooth should be filled. From the number of unfinished fillings I see I cannot help saying that there are too many men who charge simply for making the filling. They seem to forget that more work and skill are required to properly finish a filling than are necessary in preparing the cavity and making the filling. Altogether too little attention is given this subject of finishing fillings.

After an alloy has been mixed with mercury, been well kneaded and is ready for the cavity, the great majority of practitioners believe that how it is placed in that cavity makes little difference. This is a mistake that leads directly to failure, for compressing the amalgam and the use of instruments are both factors that must receive most careful consideration, provided we desire to get the best results from the use of amalgam.

To prove the correctness of what has just been stated, I took a quantity of a well-known alloy and mixed it with mercury. After it was ready for use, I made a series of fillings. In making these fillings a number of different methods of compressing the amalgam were used and different methods of instrumentation tried. A careful record was kept of each of the series made, and a week later they were tested in the dynamometer. After testing these different

fillings I tabulated the results and could scarcely believe what was before me, for some of the fillings crushed when 15 pounds were placed on them, and others would not crush under 1,000 pounds of pressure. (All the fillings were the same size.) Now when it is taken into consideration that all these fillings were made from the same mass of amalgam, we can begin to realize the effect compression and instrumentation have on the final results. The experiment I have just spoken of was not made once or twice, but I took this same alloy and used up the entire ounce in making a dozen or more experiments of the same nature. The only reward I obtained for all my labor was a verification of the first results obtained.

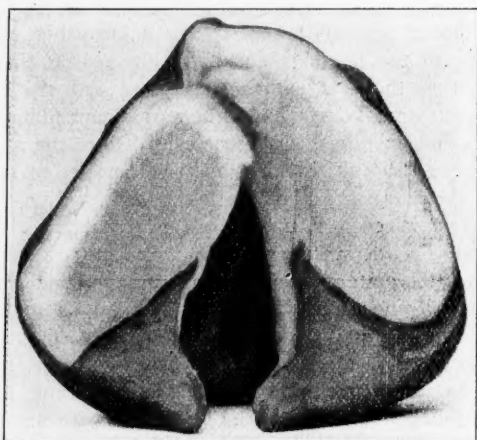
I stated that it was better not to use a burnisher on amalgam fillings made in the buccal surface, for the reason that amalgam is so treacherous that where pressure is used with the burnisher it readily creeps from the margin. Where amalgam fillings are made in test tubes and examined microscopically before the amalgam has started to set, a black ditch can usually be detected at one or more places near the margin. While the test tube is still on the stage of the microscope, place a burnisher on the amalgam and note the results when you attempt to coax the amalgam toward that black ditch. If a little force is used you will observe that the amalgam on the opposite side of the tube springs away from the margin. Practically the only way to spread the amalgam so that the black ditch will be closed is by using the burnisher with the lightest force possible or by using two burnishers at the same time, one on each side of the filling. Where cavities are filled with amalgam, after being packed, it should be let alone until fully set, for burnishing merely invites failure.

If amalgam must be used in a cavity, remember that the best results are obtained when attention is given to proper amalgamation, strongly compressing the amalgam, and to instrumentation. If there is an unwillingness on the part of the operator to follow certain well-known rules for using amalgam, some other filling material had better be placed in that cavity.—*Summary, May, 1902.*

CLEFT PALATE CASE. By Carl B. Miller, D.D.S., Cedar Falls, Iowa. Read before the Iowa State Dental Society, May 21, 1901. It is a sense of duty, as well as of pleasure, which prompts me in reporting this case. It differs from most cases of its kind in that the upper jaw was cleared of all teeth, thus making it necessary

to insert a full upper denture, as well as a palatal mechanism, the cleft in the case extending through both the soft and hard palates.

The patient, of Danish nationality and twenty-three years of age, presented herself to me July 31 of last year and wanted her upper teeth removed with the expressed wish of having a plate. Upon questioning her I found that while she knew her speech was defective, she did not know that her mouth was any different from that of anyone else, or at least that her defective speech was the result of having a condition so abnormal. Her desire was for new teeth,



thinking nothing of the betterment of her speech, or that such a thing was possible. Her teeth were nearly all decayed away, and what few remained were lying in all directions, especially in the front of the mouth, due to the fissure of the cleft at this point. These I removed at this time. Dr. Ottolengui says, "No matter how valuable teeth may be to ordinary persons, they are doubly so to the cleft-palate patient, who must depend upon them not alone for mastication, but also for speech, since they serve to retain the instrument which enables him to overcome his infirmity." My patient's teeth were too far gone to be of service in such capacity, and besides, owing to the fact that she only thought of or cared about teeth, they would very likely not be needed to hold an appliance in place. So

that the first thing to be done was to construct a plate and to make something to fit the opening if possible.

January 8 of this year I took the impression as follows: I selected a tray suitable for the case as for an impression of a mouth under ordinary conditions. I mixed a small quantity of plaster pretty thick and carried it with a spatula up into the opening or cleft, beginning to fill in the front or narrowest portion, bridging over and back, and covering the upper sides of the uvula. This formed the dome or completed the roof of her mouth. After it had set sufficiently, I coated the plaster with oil, and then filling the tray carried it into the mouth in the usual manner. Of course, in removing the portion placed up in the fissure remained; this I moved backward with pliers, and when removed put it in place on the impression, and made my cast. The taking of the impression in this case was the most difficult as well as the most important part of the operation, the divided uvula and the adjacent soft tissues being so easily moved that a correct impression of those parts was very hard to secure. However, from the cast I made a wax trial plate, and at the same time formed a piece of wax so that it filled or closed the opening and extended back and above the uvula on each side. I fastened this piece of wax to the wax trial plate and tried it in the mouth. Here I altered the shape of the wax to properly fit the opening, and at the same time made corresponding changes in the cast.

Up to this time I had in mind either to make a soft rubber velum or an obturator. Arguments in favor of each were considered. The fact that an obturator has proved very satisfactory in such cases, and the conditions in this case being such that a rubber plate was to be made, led me to the idea of making a plate with a simple extension to fill the opening. This extension would necessarily be in the form of an obturator, but different from the obturators made or suggested by Dr. Ottolengui, in that it would be of solid rubber instead of hollow.

Dr. Ottolengui says: "An obturator is an instrument designed to merely fill a gap or close an opening in the palate. To be of any service the instrument must be so constructed that it accomplishes all that the artificial velum does, even though in an entirely different manner. It must accurately fill the cleft when the parts are at rest. It must also fill the fissure whenever, and no matter how far, the movable sides of the cleft are drawn upward. To serve such a

purpose the obturator must be so thick that when the sides of the palate are drawn upward to their greatest limit they still rest against the sides of the obturator." "An obturator, unlike an artificial velum, is stationary in its position, but is of such form that the pharyngeal muscles of the throat in the movements incidental to the production of articulate sounds hug the obturator and so separate the cavity of the nose from the cavity of the mouth." "An obturator hinged to the plate does not add to its usefulness."

Having decided to make the plate with an extension to fill the opening, I first filled the opening in the model with plaster, so that the finished plate would in the hard palate portion simply extend into the opening enough to lap the border and gain any advantage



there might be in the lap to help secure the plate in place. Beginning with the soft palate, I made this extension, which I shall call an obturator, to extend farther into the opening, and wider, so that when the parts were at rest the two points of the divided uvula lay under and against the obturator. After filling in the cast here and trimming off there until its shape would produce something that would fit the case, I had little difficulty in setting up the teeth, waxing up the case, trying it in the mouth, and finally investing and vulcanizing; though the flasks were none too large to accommodate such work. A point to be observed is, that what has been done was done easily and required nothing but what we use in our everyday practice.

I had hoped to have the patient here so that we might see what has been accomplished, but I could not prevail upon her to come. The cast will show with what I had to do. Owing to the flaring of the process on each side, and the large maxillary tuberosities, it was

not easy to carry the plate to place, but with a little work it was successfully inserted. I advised the patient as to what she might expect and instructed her to return in a few days. At first she was troubled by food stopping against the plate or roof of her mouth in trying to swallow, but she soon adjusted herself to that, and has never had to have anything done to the plate since it was put in place. Her speech is very much better, as she says she can make herself understood easily now, whereas before she had great difficulty in making her wants known. It takes time for the patient to learn to talk with the appliance, as would be the case with any, for having always had such a deformity it is like learning to talk all over again. The treatment of the case could not be more simple, and yet the results are most gratifying, and I doubt very much whether something more elaborate would prove as satisfactory. The removal of the teeth and the construction of a lower plate to articulate with the upper will soon be undertaken, when she will have a condition which, while not equal to what nature usually does, will be an improvement over what nature did for her.—*Cosmos*, June, 1902.

SHELL CROWN WITH A PORCELAIN FACING. By F. Stauber, D.D.S., Brooklyn. Every practitioner is familiar with the object of a shell crown, which is to inclose and thoroughly protect any remaining portion of the crown and neck of a tooth. Personally I am very much in favor of thus preserving teeth which are beyond filling. Many patients do not care to have a full gold crown inserted on a first or second bicuspid tooth, and in those cases the porcelain facing can be employed.

There are many ways to construct a porcelain-faced crown, and I avail myself of the opportunity to report one way which I have recently tried for the first time and with remarkably good result. The tooth in question was the first upper bicuspid. After devitalizing the pulp and extirpating it, I found two very small and tortuous canals, and concluded not to enlarge them for the retention of platinum pins, but to make the crown without them. To give it an equally good and strong support I ground the tooth down just one way, which is, so to say, the main feature of the work. The root-canals were filled with oxyphosphate cement. Upon a subsequent sitting I prepared the tooth for the crown. The buccal cusp was very frail and the palatine cusp good and sound. I first ground

the masticating surface down flat in order to completely clear the occlusion from below. After separating between the teeth with a hard rubber disk, and giving the tooth a conical shape, I cut down the buccal surface to the gum margin, the same as for a Richmond crown, leaving the palatine cusp, however, as on this I depended for the main support of the crown. I then made a telescope cap of twenty-two-carat gold plate, 30 gauge, soldering it with twenty-carat gold solder, to exactly fit the tooth as it was ground down, and letting it run about one-sixteenth of an inch under the gum. Next I took the color of the teeth and the bite, and then the impression with the crown in place.

The models having been properly articulated, I backed a suitable tooth with pure gold, 32 gauge, and ground its cervical end to the proper position on the front bevel of the cap, obtaining a flush joint. This done, the exact articulation ascertained, and the tooth attached to the cap with a little sticky wax, I struck up a bicuspid cusp of twenty-two-carat gold plate and fitted it to the surface of the porcelain facing, at the same time occluding it with the lower teeth, and waxing it into position. The model was then taken off the articulator, cut down to a convenient size, and the crown invested as one would a piece of bridgework. After the wax was boiled out and the case heated for about an hour, I united the parts at the back with eighteen-carat gold solder. The crown was finished and polished like any ordinary piece of work of that kind, and fastened to the tooth with oxyphosphate cement.—*Brief, May, 1902.*

SWALLOWING.—Schreiber decides that the act of swallowing into the pharynx, barring accidental factors, is executed: First, by contraction of the mylohyoid and hyoglossus, directly followed by contraction of the geniohyoid and thyroid, the latter following so closely upon the former that it is doubtful whether the first is really the chief act in the process of swallowing; directly after this, the esophagus opens, and the mylohyoid and pharyngeal constrictors force the mass into the esophagus. It is not determined whether this is done chiefly by the mylohyoid or by the constrictors, but it is more probable that it is mainly done by the latter. There is at the same time an increase in pressure in the esophagus, which forces the contents on; and there is actual contraction of the esophagus itself. But Schreiber believes it is probable that the negative pressure in the thorax is of much importance in carrying fluids and gases, at any rate, through the esophagus. There are, then, two forms of peristalsis following this: A rapid form, in the cervical portion; a slower one, in the thoracic portion.—*Arch. f. Ex. Path. u. Phar., Phila. Med. Jour.*

Letters.**WARNING.**

New York, July 19, 1902.

To the Editor of the DIGEST.

MR. EDITOR:—We are informed by one of our representatives that a person calling himself Dr. L. W. Comstock of Columbus, Ind., is traveling among dentists and offering to sell them for \$25 a formula consisting of cocain and ether. Our representative's informant purchased the formula for \$17.50. It might be of advantage to readers of your journal were you to inform them of this imposition.

Very respectfully,

McKESSON & ROBBINS.

**AUTHORSHIP OF THE PAPAIN METHOD—REPLY BY
DR. CASSIDY.**

Covington, Ky., Aug. 9, 1902.

To the Editor of the DIGEST.

DEAR DOCTOR:—In reply to Dr. Latham's letter in the July DIGEST, I would say that if she will read again my paper in the June issue of the DIGEST she will realize that Dr. Van Antwerp was given full credit for discovering the digestive power of the paw paw, and that pulp digestion per se was not involved. Her surprise in the July number is surprising indeed.

Yours truly,

J. S. CASSIDY.

**REPUDIATES THE GERMAN-AMERICAN DENTAL
COLLEGE.**

Chicago, August 21, 1902.

Dr. J. N. Crouse, Editor Dental Digest.

DEAR SIR:—I hand you this letter for publication in your journal. I am through with all controversy with the State Board; in fact, I ought never to have had any. My troubles began when I was lured into becoming a student at the German-American Dental College. When I came to Chicago late in 1900 I was a stranger in America and a stranger to American institutions. I had letters of introduction to reputable schools, but thinking that it would be best for me to matriculate at the German-American College, I did so.

I was influenced to enter this College because of my inability at

that time to readily comprehend and speak the English language, and also by reason of the catalogues and announcements of the College which came into my possession and attracted my attention while I was in Europe. The statement was made in the college literature circulated all over Europe that it was a reputable institution and that its diplomas were of equal value with those of any reputable dental college.

I had no information to the contrary until some time after I had matriculated and become a student of the College. I had not been there long before I began to see many things I did not like, but I kept along until the College graduated me in April, 1902, being assured all the time by Dr. Huxmann that everything was all right and that I would get a license on my diploma to practice dentistry in Illinois. I presented my diploma first to Dr. Reid, the Secretary, and then to the State Board, and was refused a license by both. The remainder of the story is told in the mandamus proceedings just decided by His Honor, Judge Chetlain.

While I was a student in this College, and when I filed my petition for mandamus against the State Board, I knew nothing of the ugly facts in the possession of the State Board and disclosed on the hearing, which were so decisive of my case and the fate of the German-American Dental College. I do not see how the court could have decided differently from what it did; I am fully satisfied with the justice of that decision, and from it I shall take no appeal, for I think that it deserves to be considered final and as marking the end of the existence of the German-American Dental College.

I filed my petition in good faith, and had the aid of able counsel, but no counsel could cover up Prof. Huxmann's many frauds, which constantly came out in the evidence against him and his college. I am only one of many victims of the German-American Dental College, Dean Huxmann, and its so-called "faculty."

There seems to be nothing for me to do now except to join with Dr. Frida Mueller and compel the College and its dean to make restitution to me of what they have obtained by fraud. Accordingly, I have retained John W. E. Wayman, Esq., of No. 813 Association Building, Chicago, as my counsel and attorney to prosecute them and get my money back, and I would advise all other victims to do likewise. I have the honor to be,

Very truly yours,

ETIENNE STUMP.

THE BOSS'S DREAM.

(As Told By the Office Boy.)

Sometimes after the Boss has had too mutch Pie er somethin' fer Dinner, he'll lay down on a Lounge in the back room, an' Sleep it Off, ef 'business ain't too Rushin'. Yesterday he done that, an' when he come in the Offis later, says he, "James, I've had a mos' Delightful Dream. I thought I'd moved my Offis in a new Sky-Scraper they'd built somewhere, an' it seemed like I'd got rid of all my old, Pestiferous Patients, an' I'd got a Entirely New set, all Ritch Folks, like the Chicago dentists all has. I dreamt I had mos' Magnificent rooms, high up, an' a Offul Purty young lady with white satin Slippers, an' a Bokay of American Beauty Roses stuck in her Belt, to 'tend Door. She had a silver Platter in her Hand, an' when anyone would come in, she'd hold it out, an' they'd drop a Ten Doler gold piece in. Then she'd say, 'The Doctor is Terrible Drove today, an' Blamed ef I know whether he kin see you,' an' she'd refer the Caller to another still more Beautiful Young Lady, settin' at my Offis Door, an' she'd say she'd Inquire. So she'd come out to the Labor'tory, where I'd be a-smokin' a Henry Clay Segar, an' she'd Fuss Round a minute, an' then she'd Go Back an' say to the Man I said he might have a Appointment, later on, when I wasn't so Busy. Then she'd fix it fer about nine weeks ahead, an' the man would say, 'I'm Offul Obligated,' an' he'd go away, holdin' his jaw."

Jis' then I interrupted the Boss. Says I, "How Mutch a Weak did you pay them Young Ladies?" The Boss he kind o' got Rattled a Minute, but he had his Nerve with him, an' he said, "W'y James, I'm astonished at you! I—I—didn't Haf to pay them Nothin'. They wasn't the Kind that thinks so Offul Mutch about money. But as I was a-saying'; my Patients was all Ritch Folks, that jis' Waded in Money, an' they'd drive up in their Carriages, an' my Offis Girl she'd let 'em Come In, an' when they'd got Past the other Girl, to where I was, they'd say, reel respec'ful, 'Doctor, if you're at Leisure, would you mind puttin' somethin' in a Achin' Tooth fer me?' An' when I'd done it they'd say, 'How Mutch is it please?' an' I'd say, hesitatin', like it wasn't only a Trifle, an' I was reely most Ashamed to charge anything. 'Oh call it Fifty Dolers, Madame!' An' the Lady she'd say, 'Why is *that* all!' an' she'd take out her Purse an' Pay, an' say, 'Thank you ever so Much, Doctor.' Then she'd go Right Out, never even stoppin' to tell me how her Gran'father had

a Tooth ache all the Week, once, an' his Face it swelled Up so Offul Big he was Frightful to See, an' all of a Sudden the Tooth it Busted right in his Mouth, mighty nigh wrecking the Premises."

"But I was a-tellin' about my new Offis, James. There was one o' them Revolvin' Fountain Spittoons, lookin' like a Cake Basket, an' mine was all Gold-Plated, an' had a stream of Cologne Water a-runnin' all the time. The Chair worked by Electricity, an' had a Music-Box in the Seat. In fact, James, the whole Offis was so fine I thought I was in Heaven, at first. But the Patients was what Got Me. Nice little Girls would come a-skippin' into the Operatin' Room, an' they wouldn't point to the Ingein an' say they Hated that Buzzin'-Machine, nor they wouldn't say nothin' about how I must stop if it begun to Hurt, nor nothin', James, that would offend the most Sensitive Dentist. On the contrary, they'd say they jis' loved to have Teeth Filled, an' they'd stayed away from the Matinee a-purpose to come to the Dentist. An' if I'd keep them waitin' too long I'd heer them a-cryin' 'cause I didn't hurry up. Then when they Set Down in my Chair, they'd open their mouths Reel Wide, an' they wouldn't want to know what nothin' they seen on the Operatin' Tray was for, or would it Hurt, or nothin'. All the time they'd be smellin' so nice of Sachet Powder, an' when I got done they'd tell me they liked me Lots Better than they did their Sunday-School teacher. Then the nex' day in the early Male, I'd git a scented note from the little girl's mother, an' she'd say how perfectly delightful the afternoon had been to little Gwendoline, an' wouldn't I please telephone right away, an' let her an' Mr. Multimillion her husband know, if Mrs. Contour an' me couldn't join them at Bar Harbor the coming summer, an' spend at least a Month or two at their Cottage."

"It was Immense, James, an' I felt like I could reely love Dentistry. You know, James, they's been times when I've said I wisht I'd 'a' been a Carpenter, er most anything but a Dentist. Fer the Reason that People doesn't seem to Appreciate Dentists like they does Dress-Makers an' Milliners, James. But I wisht you could 'a' been there in my new Office, an' could of seen what Happened one Mornin', James. A lady I had a Appointment with come a-hurryin' in about Four Minutes late. She was Offul Flustered, an' I roticed she dropped a Twenty Doler gold piece in the Platter the Young Lady held out, instid of a Ten, like she wanted to Even Up matters, an' she ast the Young Lady, 'Do you reckon the Doctor kin see me, bein' as I'm Late?' An' it so Happened I was passin' through the Hall

an' I heered her, an' I spoke kind o' Soothin' an' Reassurin' to her, an' told her I'd see her Presently. Then I went out in the Lab'ratory an' read the Paper awhile, an' in about Twenty Minutes I told the Young Lady to show the Woman in the Operatin' Room, an' she Done It. The Woman was Offul Apologetic. Says she, 'I had Orter apologize again, Doctor, fer bein' so Late. Fact is, I had a Engagement with my Dress-Maker, an' she kep' me Waitin', an' after a spell, when she come to wait on me—right while she was fittin' me, indeed—I seen it was time I was Due at your Offis. So I told the Dress-Maker, says I, 'I'm due at Doctor Contour's in Ten Minutes, to have a Tooth Filled; do you reckon you kin let me go in Five Minutes?' An' she said it was Doubtful, an' Whinenot let the Dentist wait? it being' a Matter of only Triflin' Importance as Compared with gittin' the Dress right.' Then the Lady she said she jis' Sailed Into that Dress-Maker, an' she give her Fits, an' she reminded her that Dentistry was a Perfession, while Dress-Makin' was n't only a Trade, an' what she'd suggested was a Insult to the Dental Profession. Then, accordin' to the lady's own account, she told the Dress-Maker she needn't finish the Dress, but send in her Bill fer what she'd already Done, an' she'd find another Dress-Maker, after she'd Got Through with havin' her Teeth Filled by Dock Contour, for this was too Serious a Matter to be Passed Over, lightly. An' to prove the Truth of what she was a-tellin' me, James, the Lady took off her Seal Skin Sacque, an' showed me the Dress-Waist, haf fitted, an' the Bastin'-Threads an' Pins showin' all along the Seams."

The Boss's Eyes rolled in a kind o' Ecstasy, as he recalled this part of his Dream. It reminded me of the Time when Mrs. Judge Perkins she was a-tellin' the Boss about how she had jis' a Short Time before took her Dress-Maker to Task fer keepin' her a-waitin' ten Minutes, an' she'd warned her that sech Dilatoriness would injure her Patronage, an' the Dress-Maker had humbly apologized, an' promised never to let it Happen Ag'in. An' this Mrs. Judge Perkins was the very woman that would make engagements with the Boss, an' she'd say, "Now don't you forget that I am to be here at Ten tomorrow, sharp, Dr. Contour. I shall expect to be Waited On promptly." Then she'd go away, an' she wouldn't keep the Appointment, nor send no Word, but about a Weak Later she'd Come In an' say, 'Tell Doctor Countour Mrs. Perkins is here, an' kin he wait on me Right Away. I've got a Important Engagement with the Milliner, in Ten Minutes."

The Boss he Rolled his Eyes awhile, then he said: "The mos' Extraornerly Experience I had in all that Dream, was this, James—A gentleman that was havin' a Tooth Filled, he Squirmed an' Twisted a Good Deal, an' I kind o' got out o' Patience with him. You see there hadn't nothin' unpleasant happened in my new Offis, up to that Time. So I ast him, 'Aint you got no Fortitude?' An' he said Right Away that he hadn't, not a Bit. 'That is, not when it comes to dental operations,' said he. 'I'm a man of Amazin' Fortitude outside o' Teeth, though,' said he. 'Ef it come to havin' my arm cut off, why I could stretch out'—

I seen exac'ly what was a-comin', James, so says I, repeatin' his words,

"I know, you could stretch out your arm, as you say"—

"Yes," says he, "I could stretch it out, an' you might take a"—

"A saw," says I.

"Yes, a saw, an' you might,"—

"Er a carving knife, er any old thing," says I.

"Jis' so," says he, "anything that would cut, an' you might whack"—

"Migh whack that arm off," I suggested.

"Why, yes, that's right, you might whack it off, an' I'd never even"—

"Wince," says I.

"No, I wouldn't never twitch a muscle," says he. "But you jis' tetch a tooth o' mine, an' I go Wild."

"I know," says I. "Say, both of us seems to of forgotten, but do you know, you, er somebody jis' like you, has been in this offis Seven Hunderd an' Eighty Four times, in years past, tellin' this same story."

The Boss set lookin' smilin'ly at me. Then in a minute he went on: "The man he never seemed to Ketch On that I was pokin' fun at him, James. Says he, 'It wasn't me, fer I vow I ain't never been in your offis before. But I don't doubt they's numbers o' others jis' like me. In fact, I know men that has stood worse things reely than havin' teeth filled, an' they never winced no more than I would of.'" "So then, James, a Bright Idee come all of a suddin to me; I out with a pin on the Sly, an' I rammed it about haf its length in his Leg. He jumped clean over a Six Foot Screen, James, an' let out a Offul Yell. It was so loud in fact, James, that it woke me up. That was sort o' Lucky fer me, James, all things considered, fer that feller's yell hadn't no very Amiable Tone."

Cincinnati, O.

FRANK W. SAGE, D. D. S.

The Dental Digest.

PUBLISHED THE FIFTEENTH DAY OF EVERY MONTH

At 2231 Prairie Avenue, Chicago,

Where All Communications Should be Addressed.

Editorial.

THE FINALE OF ONE BOGUS DIPLOMA MILL.

We publish in full in this issue the decision by Judge Chetlain in the case where a graduate of the German-American Dental College brought mandamus proceedings against the Illinois State Board of Dental Examiners to compel them to issue a license on his diploma. The decision is elaborate and able, and shows that the judge has not only mastered all the facts presented, but has applied the law with great clearness. Even the plaintiff, Mr. Stump, is satisfied with the justice of the ruling, as is shown by his letter, published in this issue of the DIGEST.

A great many interesting things were brought out during the trial, among them the revelation of the character of Huxmann, the dean of the school. He testified that he was a graduate of the German-American Dental College, and held its degree. The State Board registration book showed him to have become a registered dentist Oct. 21, 1881. After he became secretary of the Board in 1893 he changed the book so as to make it appear that he was licensed because of being a graduate of the G. A. D. C., the oddity of which is apparent when it is noted that he was then shown to have been registered on a diploma from a college which was not in existence until six years after he was actually registered. He testified that the College kept no ledger and no account of its dealings, financial or otherwise, with either the faculty or the students. When asked if students at his college paid him sums from three to six times in advance of the legal fee for procuring a license for them, Dr. Huxmann answered that he could not recollect what was paid him, although two students testified that they had paid him exorbitant sums for procuring their licenses from the State Board.

To a student in Germany who was coming to America to enter the G. A. D. C., "Prof." Huxmann wrote: "In case you are a smoker, I advise that you bring along several hundred cigars. They are very expensive here and there is no duty on broken boxes. You

would greatly oblige me if you would write to my tailor and bring along a summer overcoat for me. You would have to put it among your own clothes, and, of course, pass it as your own through the customs house at New York. . . . I would be very glad if you would bring along for me a five-quart jug of rye whisky. Should you become seasick you might use a small quantity medicinally. At the customs house in New York you will have to claim the jug as being necessary for your personal use on the ship, so a small quantity of its contents must have been used. Your address must be on the jug—under no consideration my name."

In a letter which Huxmann wrote to Miss Frida Mueller in Germany, trying to induce her to come to America and matriculate at the G. A. D. C., he said: "Our school is entirely international. We have among our students German-Chileans, German-Roumanians, and Polanders, as well as the daughter of the president of the Board of Dental Examiners of this state, Miss Jocelyn, a native American who speaks a very little German. If you come here soon you would become her fellow-student, and through her have an opportunity to become acquainted with her father in private, and since he is the president of the Board it would under no circumstances be detrimental to you."

The lecturers testified that they were paid anywhere from \$15 to \$30 per month, that no regular course of lectures was given, that they suited their own convenience as to time and method of teaching, that there never were any meetings of the college faculty, etc. The one who was listed by Huxmann as secretary of the College testified that he was such in name only, having none of the duties of the office, and that he never attended any meetings of the faculty.

Two witnesses testified that while students at the College Huxmann had the State Board questions before the date of examination, and gave them to the students so that they could prepare themselves for the examination before the Board.

This decision of Judge Chetlain's virtually wipes out of existence the German-American Dental College, which has been a disgrace to this entire country, and has brought disrepute throughout all Europe upon the reputable schools of America. It may seem strange to our readers that action was not instituted long ago to stop this abuse, but two things must be remembered—first, that until recently Huxmann corrupted and made tools of certain members of the State Board, so that an indorsement of his institution could be obtained,

and certificates were issued to holders of his diplomas; and second, that the graduates from the German-American Dental College returned to Europe immediately, and so the corrupt practices of the school were known only in a general way. The abuse was so well covered up that for several months after we took up this work it looked as though we would not be able to find sufficient evidence that would stand in court to prove Huxmann's wrong-doing. The result of this trial will certainly be gratifying to the reputable men of the dental profession throughout the world. Our only regret is that we did not take up the work sooner. It is a curious coincidence that exactly one year from the time the old Board was removed by the governor Judge Chetlain's decision was rendered. This is but the beginning of the end of the disgraceful bogus diploma traffic that has been going on for years in this country.

WHERE FORGETTING IS BLISS 'TIS FOLLY TO REMEMBER.

In the June issue of *Items of Interest* the editor accused the DIGEST of stealing a paper from the *Items*. In the June issue of the DIGEST we replied to the charge and showed conclusively that the DIGEST had every right to the paper, inasmuch as the society before which it was read had given the paper to the DIGEST and *Items* for simultaneous publication. We remarked that we did not think Dr. Ottolengui had wilfully or maliciously misstated the facts, but that, judging from his general conduct, it was plain he had become so blinded by conceit that he imagined the dental world revolved around him and his journal. The only editorial in the August number of the *Items* is a four-page explanation by Dr. Ottolengui, endeavoring to show that his eight-line charge of plagiarism was nothing but a joke, and stating, "We are obliged to label the jest and explain the points of it." Judging from much of the matter that has appeared in the *Items*, we knew the publishers cared little how the journal was conducted, but we did not suppose they would allow the editor to devote the entire editorial space of one issue to an attempt to explain how he had played a joke on even so important a journal as the DIGEST. Quite in the English style—*eight lines of joke and four pages of explanation*. Pity the readers of the *Items* if the ponderous wit of its editor had attempted a full-page joke.

We withdraw our charitable belief that Dr. Ottolengui did not

wilfully misstate the facts about the paper above referred to, in view of his recent "explanation," as it contains charges that he knows are not true when he makes them. For instance, he says: "At the National meeting, Dr. Crouse, member of the executive committee, obtained the publication of the National proceedings for Dr. Crouse, editor." If Dr. Ottolengui attended the sessions of the National Dental Association as closely as he should, he would know that in 1901, when the Association chose the DIGEST as its official organ, its editor held no office in the Association. We think he did know it, and, furthermore, he is well aware that we do not have to exert any political pull to get papers, as the best societies of this country to-day have voluntarily chosen the DIGEST to represent them.

A side light is thrown on the lack of veracity displayed by the editor of the *Items*. At the recent meeting of the New Jersey State Dental Society he read a paper on "Shall Children's Teeth Be Filled With Gold." The fact was patent to everyone present that he was posing as the embodiment of the highest attainable skill in the use of gold. His argument was that amalgam should never be used in children's teeth—always use gold—and he stated that he might have forgotten, but he did not remember that he had ever used amalgam in children's teeth. Dr. Norman W. Kingsley, with whom Dr. Ottolengui was at one time associated, discussed the paper, and we present herewith the stenographer's report of his remarks:

"While the essayist was reading his paper I made a little memorandum that 'this is threshing old straw.' Professor Truman has anticipated that remark. This matter was gone over by Dr. Dwinelle and his colleagues as long ago as thirty or forty or fifty years; it is ancient history; there is nothing new in it. Nevertheless, the paper sounds well.

"Dr. Ottolengui is a master of the English language; the words come off his tongue trippingly, like the water dripping off the eaves; it is musical, and those who do not stop to analyze his essay or recall their own experience may be convinced by its dogmatism. I am very glad that Professor Truman has made his comments. They are a sufficient argument and answer to some of the statements Dr. Ottolengui has made.

"I cannot help calling to mind that Dr. Ottolengui's memory is very poor. (Laughter.) I know of many patients, ten or twelve years of age, or under, for whom he has put into sixth year molars the very amalgam which he now decries, and which he says he forgets he ever did. (Laughter.) But it is very convenient to have a forgetting faculty when one has a certain point make. It may be

the case with all of us, if we want to make a certain point, we forget that which we have done that will militate against us.

"Dr. Ottolengui is not only, as I said before, a master of the English language, but he has written several novels. His essay sounds to me like a novel, in which we know very well an author does not pretend to stick to facts. (Laughter.) He is working from his inner consciousness out of his imagination. One novel that Dr. Ottolengui wrote was called 'The Crime of the Century.' As I listened to his paper I recalled that when I read that book I did not know just what that crime was. I have found out now! (Loud laughter.) His last novel was entitled 'Final Proof.' We have to-day listened to the *final proof*. (Loud laughter.)"

Notices.

NORTHERN INDIANA DENTAL SOCIETY.

The Northern Indiana Dental Society will hold its annual convention at South Bend, September 24-25, 1902. An excellent program is provided and a large attendance is anticipated. All dentists are invited to attend and to participate in the meeting.

M. A. PAYNE, Secretary, Wabash.

SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

The fifth annual meeting of the Southern California Dental Association will be held at Riverside, Cal., October 20-21, 1902. An interesting program has been prepared, and the profession in this and neighboring states is cordially invited to be present.

L. E. FORD, Secretary, Los Angeles.

WISCONSIN STATE DENTAL SOCIETY.

At the thirty-second annual meeting of the Wisconsin State Dental Society, held at Milwaukee, July 15-17, 1902, the following officers were elected for the ensuing year: President, T. M. Welch; First Vice-President, F. D. Brennan; Second Vice-President, A. G. Fee; Secretary, W. H. Mueller; Treasurer, Adolph Gropper. The next meeting will be held at West Superior, July 21-23, 1903.

W. H. MUELLER, Secretary.

VERMONT STATE BOARD OF DENTAL EXAMINERS.

A meeting of the Vermont State Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, Wednesday, October 8, 1902, at 2 p. m., for the examination of candidates to practice dentistry. The examination will be in writing, and will include anatomy, physiology, bacteriology, chemistry, metallurgy, pathology, therapeutics, surgery, materia medica, anesthesia, operative and prosthetic dentistry, and an operation in the mouth. Candidates must come prepared with instruments, rubber dam and gold. Applica-

tions, together with the fee of ten dollars, must be filed with the secretary on or before October 1.

G. F. CHENEY, Secretary, St. Johnsbury, Vt.

SOUTH DAKOTA STATE DENTAL ASSOCIATION.

The annual meeting of the South Dakota State Dental Association was held at Watertown last month, and the following officers were elected: President, W. J. Davis; Vice-President, J. S. Goodman; Secretary-Treasurer, E. C. Stutenroth. The next meeting will be held at Redfield in June, 1903.

MAINE STATE DENTAL SOCIETY.

At the thirty-seventh annual meeting of the Maine State Dental Society last month the following officers were elected: President, C. H. Merritt; Vice-President, F. C. Mansfield; Secretary, H. A. Kelley; Treasurer, E. J. Roberts; Librarian, E. Bacon; Executive Committee, H. Haynes, A. W. Haskell, R. W. Bickford, C. H. Minott. The next annual meeting will be held at Kineo.

NEW JERSEY STATE DENTAL SOCIETY.

The thirty-second annual meeting of the New Jersey State Dental Society was held at Asbury Park last month, and the following officers were elected: President, F. L. Hindle; Vice-President, H. S. Sutphen; Secretary, Charles A. Meeker; Treasurer, H. A. Hull; Executive Committee, H. S. Sutphen, W. W. Hawke, F. E. Riley, W. G. Chase, A. Irwin; Member State Examining Board, B. F. Luckey.

VIRGINIA STATE DENTAL ASSOCIATION.

The Virginia State Dental Association held its thirty-third annual meeting at Old Point Comfort, August 5-7, 1902, and elected the following officers: President, B. Bridgeford; First Vice-President, I. B. Smith; Second Vice-President, R. L. Simpson; Third Vice-President, R. L. Walker; Treasurer, W. H. Ewald; Corresponding Secretary, J. H. Moore; Recording Secretary, G. F. Keesee; Executive Committee, W. F. Stiff, E. J. Applewhite, E. P. Beadles.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

At the recent meeting of the National Association of Dental Examiners held at Niagara Falls last month, the following officers were elected: President, Charles A. Meeker, Newark, N. J.; Vice-President from West, B. L. Thorpe, St. Louis; Vice-President from East, J. A. Libby, Pittsburg; Vice-President from South, J. A. Hall, Collinsville, Ala.; Secretary, J. P. Root, Kansas City. Committee on Colleges, C. C. Chittenden, Madison, Wis.; J. A. Hall, Collinsville, Ala.; H. J. Burkhart, Batavia, N. Y. Committee on Conference, G. E. Mitchell, Haverhill, Mass.; J. G. Reid, Chicago; J. A. Libby, Pittsburg. Membership Committee, W. M. Darwood, Omaha; P. J. Heffern, Pawtucket, R. I.; J. E. Weirick, St. Paul. State Advisory Committee, Will-

iam Jarvie, Brooklyn; F. A. Shotwell, Rogersville, Tenn.; H. J. Allen, Washington, D. C. Committee for Promoting Relations with Foreign Examiners, William Carr, New York City; G. W. Pelzer, Great Falls, Mont.; H. W. Campbell, Suffolk, Va.; R. H. Jones, Winston, N. C. Committee on Contracts and Accommodations, J. Allen Osmun, Newark, N. J.

NATIONAL DENTAL ASSOCIATION.

The sixth annual meeting of the National Dental Association was held at Niagara Falls, N. Y., July 28-31, 1902, and the following officers were elected: President, L. G. Noel; Nashville; Vice-President for West, C. C. Chittenden, Madison, Wis.; Vice-President for East, Charles McManus, Hartford, Conn.; Vice-President for South, S. W. Foster, Atlanta; Recording Secretary, A. H. Peck, Chicago; Corresponding Secretary, W. D. Tracy, New York; Treasurer, H. W. Morgan, Nashville; Member Executive Council, Waldo E. Boardman, Boston; Publication Committee, A. H. Peck, T. L. Gilmer, G. V. I. Brown. The next meeting will be held at Asheville, N. C.

LATEST DENTAL PATENTS.

- 702,645. Impression cup, W. E. Griswold, Denver, Colo.
- 702,646. Dental tool, same.
- 702,805. Dental appliance. H. E. Lindas, Great Bend, Kan.
- 702,857. Bridgework, W. E. Griswold, Denver, Colo.
- 702,871. Bridgework, same.
- 703,063. Bur, F. F. Hawkins, Troy, N. Y.
- 703,720. Artificial denture, J. E. Dunn, Chicago.
- 703,729. Mouth-mirror, J. Kupper, Bamberg, Germany.
- 704,601. Dental cuspidor, J. E. Van Nostran, Canton, O.
- 704,937. Dental engine, A. W. Schramm, Philadelphia.
- 705,320. Forceps, S. H. B. Cochrane, Canal Winchester, O.
- 706,013. Rotary scraper, T. J. Boyce, Chicago.
- 706,016. Dental flask, F. A. Brewer, G. W. Harvey, Watsonville, Cal.

DECISION AGAINST THE GERMAN-AMERICAN DENTAL COLLEGE BY JUDGE CHETLAIN.

STATE OF ILLINOIS, }
COUNTY OF COOK. } ss.

IN THE SUPERIOR COURT OF COOK COUNTY.

PEOPLE EX. REL. ETIENNE STUMP

THE STATE BOARD OF DENTAL EXAMINERS. }

This is a petition by the relator, Etienne Stump, for a writ of mandamus to compel the State Board of Dental Examiners to issue to him a license to practice dentistry. The relator claims that on the 30th day of April, 1902, he then being in every way qualified to practice dentistry, applied to the Board for a license to practice in this state, exhibited a diploma from the German-American Dental College, and tendered to it the license fee of \$5.00, claiming

that he was a regular graduate of said College, and that said College was a reputable dental college, basing his right upon the mandatory provision of the law, which requires the Board to issue a license to any regular graduate of any reputable dental college without examination, and that the Board without any reasonable cause, arbitrarily, maliciously and with intent to injure the German-American Dental College, refused to grant and issue a license to him. It appears from the evidence that relator made the application to the Board April 30, 1902, exhibited his diploma from the German-American Dental College, tendered to the secretary of the Board the fee provided by law, demanded a license, and that the Board refused to issue it.

The questions involved are of grave importance, because they affect not alone the rights of petitioner, but also the rights of the German-American Dental College and other dental colleges. The Act by which the State Board is created and under which the petition was filed is entitled "An Act to insure 'the better education of practitioners of dental surgery, and to regulate the 'practice of dentistry in the State of Illinois.'" In Section 1 it is provided that "it shall be unlawful for any person who is not at the time of the passage 'of this Act engaged in the practice of dentistry in this state, to commence 'such practice unless such person shall have received a diploma from the 'faculty of some reputable dental college duly authorized by the laws of this 'state, or of some other of the United States, or by the laws of some foreign 'country, in which college or colleges there was at the time of the issue of 'such diploma annually delivered a full course of lectures and instructions in 'dental surgery." In Section 2 it is provided that "a Board of Examiners to 'consist of five practicing dentists is hereby created, whose duty it shall be to 'carry out the purposes and enforce the provisions of this Act." In Section 6 it is provided that "but said Board shall at all times issue a license to any 'regular graduate of any reputable dental college, without examination, upon 'the payment by such graduate to the said Board of a fee of \$5.00."

The Act does not define what a reputable college is, but vests the Board of Dental Examiners with power to determine this question, which is one of fact submitted to the Board for investigation and decision, which involves the exercise of judgment and discretion, is judicial in its nature, and when once exercised is final and not subject to review by the courts. But the discretion conferred must be fairly exercised in the interest of the public. Where it clearly appears that it has been abused or exercised arbitrarily, or with manifest injury, it may be controlled by mandamus. *Dental Examiners vs. People ex. rel.*, 123-227; *People ex. rel. vs. Dental Examiners*, 110-180; *People vs. McCoy*, 125-297.

The questions for this court to determine are:

First.—Did the Board investigate, hear and determine the question as to whether the German-American Dental College was a reputable college? *Second*.—Did it act upon proper and sufficient evidence? *Third*.—Did the Board fraudulently, or without reasonable cause, arbitrarily or maliciously, or with intent to injure the German-American Dental College, refuse to issue a license to relator?

Upon the hearing certain questions were submitted to the court. It was contended that the efficiency and scholarship of the applicant alone should

determine the question of reputability. The character of an institution of learning determines its reputability. Questions as to the efficiency, character and attainments of its instructors, the suitability of equipment and facilities for theoretical and practical work, for imparting theoretical and practical scientific knowledge, subjects to be taught, the number of lectures to be given, the number and length of the semesters, and the length of time between semesters for practical work, observation and experience not attainable in college, and the general conditions of matriculation and graduation, judged according to standards generally recognized by the dental colleges and the great body of learned practitioners throughout the country, requisite to fit students to enter upon the practice of dentistry and dental surgery, are proper subjects of inquiry and consideration in determining the question of reputability. And I may say that where these are defined by reasonable rules and regulations applicable to all colleges alike, such rules and regulations as to the matters covered by them must be held to be in full exercise of the Board's discretion. But there are other matters equally if not more important, which the Board may consider, such as the failure of a college to observe its own rules and public requirements; whether it is a mere commercial enterprise and graduates students for money, without reference to scholarship, or seeks by money or other disreputable means to secure recognition or licenses for its students from the State Board, or is otherwise guilty of conduct which in the ordinary sense of the word is not "reputable."

It will be observed that the law places no limit upon the methods by which the State Board shall investigate and gather information bearing upon the question of reputability. Considering the purpose of the Act, a broad latitude must be accorded, as the law undoubtedly gives the Board the right to proceed in any reasonable way and to exercise its discretion in any reasonable manner it may see fit. It is contended that the Board has no power to establish rules and regulations defining what shall constitute sufficient education and training to practice dentistry, or determine what shall be required to make a college a "reputable" institution. It is further contended that some of the rules and regulations established by the Board are not calculated to test the real standing of dental colleges.

The purpose of the Act expressed in its title is "to insure the better education of practitioners of dental surgery, and to regulate the practice of dentists." By Section 2 a Board of Dental Examiners is created, consisting of five practicing dentists, "whose duty it shall be to carry out the purpose and enforce the provisions of this Act." While there is no express provision authorizing and empowering the Board to establish rules and regulations, I am of the opinion that the adoption of rules and regulations is clearly within the purview of the Act, and that the Board as an incident to the powers expressly conferred has the power to define its discretion by the adoption of rules and regulations, but these must be reasonable, general and applicable to all colleges alike. Students desiring to qualify themselves to practice dentistry, colleges engaged in qualifying them and the public generally have a right to know what courses of study, requirements and general conditions will entitle a college to be classed as reputable.

I am of the opinion that the Board not only has the power to pass such

rules and regulations, but that it is incumbent upon it so to do, and so far as possible to establish and promulgate them as the basis of the exercise of its discretion. The conditions and requirements for the determination of so important a right should not be left to the arbitrary determination of the Board upon evidence and rules and regulations not made public. I have carefully considered the general rules and regulations in force at the time the relator applied for a license, and hold that, with the possible exception of that part of Rule 4 which requires certain evidence of an English education, they are fair and reasonable. The Board may require that all examinations shall be held in the English language, but the provision that one shall not be entitled to practice dentistry in this state who is otherwise qualified, because he does not produce the evidence of a good English education required in that rule, is a doubtful exercise of the power conferred upon the Board. In determining the question of the reputability of the German-American Dental College the Board had the right to consider the requirements prescribed in its rules and regulations then in force, and I find that they did consider them in passing upon the application of relator. While a general rule or regulation as to any one condition or requirement must be held to be the full exercise of the Board's discretion as to such condition or requirement, nevertheless, the adoption of general rules and regulations is not the limit of the Board's discretion. It may consider any proper evidence bearing upon the question of reputability.

It appears from the evidence that the German-American Dental College was incorporated in 1888; that Dr. Fritz W. Huxmann is and always has been its Dean, and that as early as 1891 and, in fact, ever since its incorporation, the State Board has had trouble with it. Dr. Charles R. E. Koch, who was a member of the Board from 1886 to 1891, testified that at that time he and the members of the Board were of the opinion that instruction sufficient in quantity and quality was not given to make the College reputable, and that the respondent's chief purpose seemed to be to graduate foreigners who did not expect to practice dentistry in this country; and that in 1890 or 1891 it was denied recognition. It appears that it was not recognized as reputable, if at all, until the resolution of the Board of November 14, 1893, making all dental colleges reputable which consented to an examination of their candidates by a member or members of the Board before graduation.

Dr. H. W. Pitner, a member of the Board from May 10, 1897, to August 10, 1901, President of the Board two years, a witness for the relator, testified that the Board had been having trouble with the German-American Dental College ever since its organization; that many rumors were abroad reflecting upon its integrity and the integrity of the members of the Board; and also had trouble with Dr. Huxmann in regard to translations, and the agreement of June 18, 1900. Dr. W. C. Jocelyn, a member of the Board from 1897 to 1901, President of the Board from 1897 to 1899, also a witness for relator, testified to troubles with said College and with Dr. Huxmann.

It appears that in 1897 the Board adopted a list of colleges whose diplomas were recognized as reputable. The German-American Dental College does not appear on it. I do not recall evidence of a single instance where a license was issued by the Board upon the diploma of the College alone. The

record does not disclose any inference of recognition from licenses issued upon diplomas, except such as may be drawn from cases where they were issued after examination of the applicants by the Board. In the recitals of the agreement of June 18, 1900, between the Board and the College, granting the German-American Dental College the right to adopt a college course of one-half the duration required of other dental colleges, it appears that the question as to whether the Board had recognized the College as reputable was in dispute. It is true that the resolution offered by one J. H. Smyser, then a member of the Board, and now under indictment for the gravest offences committed in the discharge of his duty, was passed, providing that, "in compliance with the laws of the State of Illinois, and in compliance with "the rules and regulations governing the Board of Dental Examiners, as published in a report to the Governor for 1899, the diplomas of the German-American Dental College will be recognized." But the form and meaning of this resolution were at once questioned, and August 12, 1901, by a unanimous vote of the Board, this resolution was rescinded and a substitute was passed, providing for recognition of the German-American Dental College only upon compliance with the general rules and regulations of the Board then in force. This resolution also provided that the Board accept a consecutive course of study of eighteen months at the German-American Dental College as equivalent to a full three years' course of study in the English-speaking schools, which was in direct violation of the general rules and regulations then in force.

It will be seen that through influences not fully disclosed by the evidence the German-American Dental College frequently sought for and obtained special privileges from the Board, that it was a constant source of trouble, and that its standing as a reputable college was continually in dispute. If compliance with the rules and regulations of the Board be the test, the evidence fails to show that said College was ever at any time entitled to recognition. In this connection I may say, that the agreement of June 18, 1900, giving to said College the right to adopt a college course one-half the duration required of all other dental colleges, which conferred upon it a special privilege not granted to other colleges, was in direct conflict with the general rules of the Board on that subject (which the Court holds to be the measure and limit of the Board's discretion), was manifestly entered into not for the benefit of the public, but for the private benefit of the College, and was therefore null and void. Likewise, that portion of the resolution of August 12, 1901, above referred to, conferring a special privilege as to the time of study so far as it seeks to exempt the College from the operation of the general rules and regulations of the Board, is held to be a clear abuse of the discretion of the Board, and absolutely void, and the German-American Dental College, the illegal beneficiary of the special privilege thereby conferred, can not receive any benefit therefrom. All other similar acts from said Board must be held for naught. Where the Board, whether actuated by proper or improper considerations in the exercise of its discretion, by rule, resolution, agreement, contract or other action, exempts any college from the operation of its general rules and regulations, such action must be held a clear abuse of its discretion and therefore void.

On April 30, 1902, when relator applied for his license, it may be fairly inferred from the evidence that the members of the Board were cognizant of all matters of record touching the German-American Dental College. Dr. J. G. Reid, at that time a member of the Board, had been on the Board for a number of years, and was acquainted with the College, its previous history and its Dean. The evidence shows that relator made his application personally and by attorney appeared before the Board. He was informed that the Board was not satisfied that the German-American Dental College was a reputable college, and the Board asked for further information. While there is some conflict in the evidence, several witnesses testify that the Board asked for a schedule of lectures, and that the relator and his attorney then left. May 1, 1902, the relator and his attorney again appeared before the Board. They submitted only a catalogue, which the Board already had, and the relator, through his attorney, told the Board that they were not obliged to furnish further evidence, and declined to do so, basing the relator's rights upon the diploma. The Board thereupon took action, the record of which is as follows: "The 'application of Etienne Stump for a license on a diploma from the German-American Dental College was renewed before the Board and refused for the 'reason that the Board was not satisfied with the reputability of the German-American Dental College.'"

The Court holds that the foregoing action of the Board was in effect a determination by the Board that the College was not reputable, but whether or not this be so, it appears from the evidence that there was a hearing of the question and the special request made by the Board for further information. The burden of furnishing further evidence and demonstrating the reputable character of the College was on the relator and not on the Board (State ex. rel. vs. Chittenden, late decision Supreme Court of Wisconsin). Especially should this be so in this case, where it is conceded that the college had not complied with many of the general laws, rules and regulations of the Board then in force, and had not complied with Sub-rule 7, which imposes the duty on all colleges seeking recognition to submit certain information to the Board. The printed catalogues and literature of the College as to the time of study and other requirements were in direct conflict with those of the Board. In argument much stress was laid on the claim that the Board had previously recognized the college as reputable. Even although it had been so recognized, the Board had the right at any time for good cause to withdraw such recognition, a right which the Board very properly saw fit to define by a special rule.

It further appears from the evidence that in October, 1901, all the members of the Board visited the college, and they testify that they were not satisfied with the facilities and equipment of the institution; that they found no schedule of lectures, and obtained only such meager information as appears in relator's "Exhibit 2."

The printed literature of the College contains what purports to be, but what is not, a copy of a letter from the Governor of this state. It was evidently published and circulated for the purpose of impressing the public with the belief that the College was a college in regular standing and had been recognized by the State Board since 1893, and that a communication from the highest official source attested the fact that the records of the Board of

Dental Examiners so showed. I cannot but feel that this copy was deliberately made for an improper, selfish purpose, and was well calculated to deceive the public.

It is fair to infer from the evidence that the Board was in possession of all these facts at the time the relator made his application for a license.

The Court upon the hearing, against the objection of relator, admitted evidence of the general reputation of the College April 30, 1902, only, however, upon the promise of evidence to show that the members of the Board had knowledge of such general reputation at that time. This evidence was admitted upon the theory that the Board might avail itself of all knowledge from all reliable sources, and might possibly consider the fact of general reputation. Although upon the issue it was entitled in any event to but little weight, it might with all other facts in evidence then before the Board be considered on the hearing. It was shown that Dr. Reid at that time had knowledge of the general reputation of the College.

I therefore find from the evidence that the Board heard and determined the question as to whether the College was a reputable college; that it had before it competent evidence, both direct and circumstantial, touching upon the question. I therefore hold as a matter of law that its action was final. The cases cited above, and many others too numerous to mention, fully sustain this proposition.

The evidence fails to show that the Board or any member of the Board acted arbitrarily, without cause or maliciously, and with intent to injure the College. All the members of the present Board took the stand. They testified like fair men, having no feelings of enmity or revenge, no private interests to serve. The record fails to disclose any motive on their part to act arbitrarily or maliciously. By profession they are practicing dentists, apparently men of large experience, scholarly attainments and high character. Their testimony, and their conduct and demeanor while testifying, impressed me with the belief that in passing upon relator's application they were actuated solely by desire to fairly and impartially consider and determine the question as to the reputability of the College, and that the action taken was the honest and deliberate judgment of the Board. Counsel to justify the issuance of a writ of mandamus sought to affirmatively prove that the College was in fact a reputable College. In this I think he failed. Upon that issue a wide latitude of proof was allowed.

It appears from the evidence that Dr. Fritz W. Huxmann is and has been the head and front of the institution, I might say its greater part. It appears there were no meetings of the faculty, and no regular books were kept, and when counsel for the respondent asked for the book containing the names of students who had matriculated, it was not produced. The attitude of Dr. Huxmann was inconsistent. While claiming the benefit of the law and to be entitled to recognition, he utterly ignored the rules and regulations of the Board, sending out catalogues and prospectuses since the adoption of the rules and regulations October 18, 1901, showing a course of study of only three successive semesters of six months each, in direct violation of such rules and regulations.

While I have nothing to say against the worth and standing of the doctors

who were instructors in the branches assigned them, I think upon a fair and impartial consideration of all the evidence any disinterested person would say that the chairs of the institution were not properly filled. There was an entire lack of harmony between the members of the so-called faculty. In fact, some were not even acquainted with others, and their appearance on the witness stand did not impress me with the fact that they were imbued with the high spirit and appreciated the great responsibility that are attached to their positions. The evidence shows that in matriculating students Dr. Huxmann did not always observe the conditions prescribed in the rules and regulations of the Board. If the testimony of some of the witnesses may be believed, Dr. Huxmann promised speedy graduation, contrary to the printed requirements of his College, as well as those of the Board, and during an examination by the State Board he furnished answers to questions to his students in advance. The evidence shows that part of the time for the past ten years Dr. Huxmann was himself a member of the Board and was closely associated with the members of the Board, and a part of that time was translator for the Board of the examination papers of the students from his own College; that he continuously sought and availed himself of advantages and privileges not accorded to other colleges, in direct violation of the rules of the Board. Whether these concessions were the result of sinister influence, or the unsolicited favors of the generous Board, we are left to conjecture. They were at least illegal and unjust. Several letters of the Dean were read in evidence. While not going into the details as to the matters therein contained, suffice it to say that they were of a character and upon subjects not such as to exemplify his fitness for a deanship, and tend to afford corroborative proof that he does not fitly represent the dignity of his position as dean of an institution which claims the right to and does confer degrees.

The evidence is conflicting on the question as to equipment and facilities. The members of the Board visited the College at an inopportune time, when a change of location to a new building necessitated moving, and at a time when installation had not been completed. While not elaborate, I think it may be justly said that for a small institution the College was fairly well equipped.

I shall not take time to further point out and particularize any of the facts which were elicited upon the hearing, but find from all the evidence that the relator has failed to make out his case by a preponderance of the evidence. The tendency of the times in all departments of human endeavor, and especially in the professions, is to require of students a more thorough and comprehensive knowledge of the subjects, greater opportunities for theoretical and practical instruction, larger courses of study and greater general efficiency. It is to be regretted that the equipment, facilities and advantages suitable for adequate and thorough education render it almost impossible for poor men, however ambitious and learned, to properly prepare young men for their lifework and equip them with the knowledge and practical experience in all departments of study which render them proficient and worthy of a degree, but the poverty of worthy men is no excuse for failure to observe the reasonable requirements of the state for the protection of its people from unskillful and uneducated practitioners. Equally untenable and unworthy is the

suggestion of the Dean of the German-American Dental College, that the influences of college trusts, of which there is no evidence, and the action of the Board in establishing severer requirements for matriculation and graduation indicate a desire to discriminate against the German language and German institutions. If the Board has erred in this regard, it is in following the example of Germany, whose requirements exceed those of any other country, whose scholars lead the world in thoroughness and proficiency, and whose schools of learning are the glory of that sturdy people.

Upon a careful consideration of all the evidence in the case, I am constrained to deny the prayer of relator's petition, and the petition will be dismissed with costs to be taxed.

News Summary.

L. P. RUFF, a dentist at St. Louis, died Aug. 1, 1902.

A. WILKES SMITH, a dentist at Richmond, Ky., died July 27, 1902.

HENRY HAUSENSTEIN, a dentist at Brooksville, Miss., died July 25, 1902.

AARON AMES, 71 years old, a dentist at Kankakee, Ill., died Aug. 2, 1902.

R. C. BROWER, a dentist at San Francisco, committed suicide July 10, 1902.

F. A. STRAYER, formerly a dentist at Jefferson, Ia., is dying from consumption.

N. T. FOLSOM, 79 years old, a dentist at Manchester, N. H., died July 14, 1902.

S. B. BISHOP, 50 years old, a dentist at Pittsburg, died of heart disease July 20, 1902.

J. A. WHITE, a dentist at Saginaw, Mich., 39 years old, was drowned Aug. 11, 1902.

A. M. CALLAHAM, 62 years old, and formerly a dentist at Topeka, Kan., died July 13, 1902.

J. W. LOPP, a dentist at Columbus, Ind., died suddenly from heart failure July 14, 1902.

C. F. RICHARDSON, a dentist at Helena, Mont., died July 13, 1902, from heart disease.

D. F. ROBINSON, a young dentist at Montgomery, Ala., was killed in a quarrel Aug. 9, 1902.

C. C. HAZEN, 44 years old, a dentist at Council Bluffs, Ia., died from paralysis July 13, 1902.

C. T. PELLERIN, 54 years old, and formerly a dentist at Montreal, Canada, died July 14, 1902.

FRANK L. BOOTH, 28 years old, a dentist at Victor, N. Y., died Aug. 8, 1902, from consumption.

EASTERN ONTARIO DENTAL ASSOCIATION closed its twenty-third annual session at Cornwall, Ont., July 10, and elected the following officers: President,

Dr. Clark; Vice-President, A. J. Gunn; Secretary and Treasurer, W. B. Cavanaugh.

W. B. SHORT, 69 years old, a dentist at New York City, died from apoplexy July 18, 1902.

W. V. ELLIOTT, 41 years old, a dentist at Elmira, N. Y., died of typhoid fever July 20, 1902.

J. D. TODD, 56 years old, a dentist at Denver, Colo., died suddenly July 28, 1902, of septic fever.

S. G. HOLLAND, 71 years old, a dentist at Atlanta, Ga., died from heart failure July 13, 1902.

C. A. SHANNON, 60 years old, a dentist at Stephens City, Va., died July 18, 1902, from appendicitis.

W. H. CUMMINGS, 32 years old, a dentist at Syracuse, N. Y., died of spinal meningitis July 14, 1902.

T. ACHILLIS, a young dentist at Muskegon, Mich., was instantly killed July 15, 1902, by touching a live electric wire.

J. P. WILLIAMS, 40 years old, a dentist at Chattanooga, Tenn., died suddenly Aug. 11, 1902, from heart disease.

A. W. HARLAN of Chicago, ex-editor of the *Dental Review*, was married to Mary E. Gallup, a dentist of Boston, June 30, 1902.

J. J. REED has sold his practice at Rockford, Ill., and located at Beloit, Wis. He will be married to Miss Nellie Kimball in the near future.

COLLEGE INCORPORATED.—August 5 the "Memphis College of Dentistry" was incorporated at Memphis, Tenn., with a capital stock of \$20,000.

BANKRUPT.—J. S. Romine, a dentist at Mitchell, Neb., has left town suddenly, leaving several thousand dollars' worth of debts and no assets.

EARL F. MUNSON, 20 years old, was drowned July 15, 1902. He was the son of C. W. Munson, the well-known dealer in dental supplies at Toledo.

HOWARD GRAY, 21 years old, a dentist at Tonawanda, N. Y., was drowned Aug. 4, 1902, while trying to save the life of a girl who had fallen into the Niagara River.

PHYSICIANS' PROPORTIONS.—The *Medical Times* states that according to the latest census every physician in the United States has 655 persons to look to for his support.

PENSACOLA (FLA.) DENTAL SOCIETY was organized August 11, 1902, and the following officers were elected: President, C. R. Mitchell; Secretary, H. H. Boulter.

TOO STRONG.—Dr. T. E. Strong, a dentist at San Francisco, was last month fined \$30 for assault and battery upon a patient who complained that a set of teeth did not fit.

FIRES.—Drs. Cook and Van Verst, August 9, Holland, Mich., small fire caused by a leak in a gasoline stove.—W. H. Gelston, Philadelphia, July 31, \$200.—A dentist in New York City had his office damaged to the extent of \$100 by fire and water July 25.—Dr. Mullins, Lee, Mass., \$1,000, August 14.—

Meriwether & Cheatham, Cadiz, Ky., July 20, \$100; no insurance.—M. W. Snow, Salt Lake City, Utah., July 15, \$3,000; insurance \$1,700.

NEVER TOO LATE.—A New Jersey woman aged 65 gave birth to a girl. Husband 70. Trains leading out of Jersey are thronged with terror-stricken old women.

HOSPITAL DENTIST REMOVED.—At the last meeting of the Board of Directors of the Eastern State Hospital of Virginia, the office of dentist at the institution was abolished.

FAYETTE COUNTY (O.) DENTAL ASSOCIATION was organized last month, and the following officers were elected: President, E. C. Hamilton; Secretary, G. B. Saxton; Treasurer, A. M. Bush.

MARKET REPORT.—From the market review of the *New England Druggist* for April we gather that Japan wax is firmer, asafetida is strong, and "epsom salts are moving steadily into the regular channels."

DIVORCES.—Mrs. J. B. Entrikin on July 25 was granted a divorce from her husband, a dentist at Des Moines, Ia.—Mrs. J. S. Wilson has brought suit for divorce against her husband, a dentist of Bristol, Conn.

FOREIGNERS.—In Europe ten out of every 1,000 people are living out of their own country; in America, 137 out of every 1,000, while 300 out of every 1,000 Australians were born in some other part of the world.

EARLY DENTITION.—Dr. Zeleski reported the case of a syphilitic infant in whom the first tooth appeared at the end of the first month; 7 weeks later a second tooth appeared on the lower jaw.—*Phila. Med. Jour.*

REPLEVIN SUIT FOR TEETH.—A woman in Grand Rapids, Mich., has brought a replevin suit against her dentist to recover her set of teeth, which the dentist refuses to give up until the last payment is made on same.

"SOME ACHIEVE GREATNESS."—W. C. Root, a dentist at Oyster Bay, the President's summer home, has achieved a sort of cheap notoriety by refusing to allow President Roosevelt to use his rooms during the five weekdays that he was not there filling teeth.

BLEACHING PINK RUBBER.—I have found that the quickest way to bleach pink rubber is to focus upon it the rays of the magnifying glass, taking care not to burn it, as this method gives you a beautifully bleached pink in about five minutes.—*L. Arndt, D.D.S.*

REMOVING PLASTER.—Sugar placed in water, or the use of simple syrup, will greatly facilitate the removal of plaster of Paris from the hands after applying plaster dressings. The use of sweet oil is also serviceable for this purpose.—*Internat. Jour. of Surgery.*

ACHING VOID.—"Brooks," said Rivers, "that's the second time I've heard you use the phrase 'aching void.' I wish you would tell me how a void can ache?" "Well," said Brooks, reflecting a moment, "not to speak of a hollow tooth, don't you sometimes have the headache?"—*Chicago Tribune.*

STILL MORE APPRECIATION.—"I send subscription for 1902 and for 1903 in advance, as I would not care to get along without your valuable paper." F. C. Runge, Jr., Houghton, Mich.—"The Digest is an up-to-date magazine, and congratulations are due the editor for its management." J. F. Gallo-

way, Santa Ana, Cal.—“The DIGEST is well worth the money.” E. L. Yard, Florence, Colo.

“PARALYSIS?” said an Irishman. “It’s the dis’ase that makes ye so that ivery time ye move ye can’t stir.”

BURGLAR BURGLER.—It is reported that Dr. L. W. Skidmore of Moline, Ill., discovered a burglar in his office the other day, and scared him away before he could take anything. After he had left the doctor found a new \$100 bill on the floor, which the burglar had dropped in his excitement. Dr. Skidmore says, “Come again.”

“BY THEIR DEEDS YE SHALL KNOW THEM.”—“Dr. Blair, the painless tooth extractor, will be here next week. He is well known, as he extracted 1,000 teeth here two weeks ago. Don’t fail to see him, as this will probably be his last visit.”—Owosso, Mich., *Press-American*. Probably there are no more teeth left in the town.

DENSITY OF POPULATION in foreign countries has recently been computed. Great Britain leads with 132 inhabitants per square kilometer, which is equal to 0.3861 square mile; then comes Japan, 114.4; Italy, 106.6; the German Empire, 104.2; then comes Austria, 87; Hungary, 59.6; France, 72.2; Spain, 85.9; United States, 8.4; Russia, 5.9.

SPITTOONS, TO KEEP CLEAN.—Mr. A. W. Wright, Jr., of London finds that a little sulphate of copper sprinkled inside the spittoon (metal or earthenware) before the day’s operations commence, prevents any unpleasant odor, does not allow the interior of the spittoon to become furred, and renders it much easier to cleanse than usual.—*Ash’s Circular*.

INSOMNIA CURE.—A very simple method of inducing sleep in cases of persistent insomnia, and one that has succeeded where many drugs have failed, is: Simply administer a moderate amount of liquid food before the patient goes to bed. This diverts the blood from the brain to the abdominal organs, and takes away the cerebral excitement that precludes sleep.—*N. Y. Medical Journal*.

OSTEOPATH.—For there wasn’t a tendon or muscle

He hadn’t located quite pat;

Each ligament, too, in the inside of you

He knew just the point it was at;

This osteologic perception,

So intense, almost rendered you silly;

And we called him atomical,*tiny and comical,

Cute, anatomical Willie.

—*Town Topics*.

COUNTRY DOCTOR.—Just across the border in Maryland a few years ago an old country doctor died. He had given a half century to the people of his county. He had never declined to answer a call, however bad the weather, or however poor the patient. In a material sense his life was not a great success, for he cared little for money and generally gave away what he got. But after his death the people realized what he had been to them and their children and their children’s children. So they met and raised a goodly sum and erected a monument to him. It was one of the most genuine tributes to

simple goodness ever known, and in all counties, and in all sections are country doctors who deserve larger appreciation while they live and noble memorials after they die.—*American Medicine*.

GREAT AGE FOR GIRLS.—"It's a great snap to be a working girl," declared the Rev. Dr. P. S. Henson. "They're working into the doctors' and dentists' offices, and the pulpit, the banks, the stores—about the only chance the men will have soon will be to get off the earth. We are beginning to sympathize with the man who went to the war and cried at the sight of blood. 'Don't be a baby, John,' said his comrades. 'I—I wish I was a baby,' he sobbed, 'and a girl baby, too.'"—*Ex.*

QUESTION OF VACCINATION.—He was sitting by her side at dinner, proudly congratulating himself upon being where he could look down upon the beautiful neck and arms. "I am being tortured," she said, as she moved uneasily. "I have been vaccinated, and it is just 'taking.' " "Why," he said, unguardedly, as he cast another glance at that handsome neck and those lovely arms, "where were you vaccinated?" "In Boston," she replied, as a smile drove away the evidences of pain.—*Med. Standard*.

EXAMINING BOARD AFFAIRS.—C. S. Searles of Dubuque has been appointed by the governor to succeed J. S. Kulp of Muscatine, as a member of the Iowa State Board of Dental Examiners.—The Massachusetts State Board of Registration in Dentistry met in June and passed 43 out of 98 applicants for license.—The North Dakota State Board of Dental Examiners met in July and passed fourteen applicants.—The Vermont State Board of Dental Examiners met July 9 and passed nine out of thirteen applicants.

ROBBERIES.—Burglars at Evanston, Ill., looted the office of a dentist of \$70 worth of material and tools, and also exchanged shoes with the owner of the office.—July 16 the office of a dentist at New Albany, Ind., was robbed of \$35 worth of gold.—July 12 the offices of five dentists at Sandusky, O., were robbed of \$200 worth of material and tools.—July 26 \$50 worth of gold was taken from a dentist's office at Allentown, Pa.—August 7 a young man was arrested in Jersey City, and confessed to having robbed the offices of fifteen dentists in towns through the state.—Several dentists in New York have been robbed by a man who calls to have a bridge made, and who takes everything portable while the dentist is called out of the office a moment by a confederate of the robber.

ALCOHOL; ITS EFFECT ON DIGESTION.—In a paper on the effect of alcohol on digestion, Dr. J. A. Storck reaches the following conclusions: (1) Small quantities of alcohol favor salivary and gastric digestion; large quantities inhibit salivary, gastric and pancreatic digestion. (2) Alcohol, whisky, gin and brandy are less harmful to the digestive processes than are malt liquors and wines. (3) The continuous use of alcohol, even in small amounts, is liable to prove detrimental to the digestive process. (4) In persons of weak digestion, alcohol as a rule is harmful, unless given well diluted. (5) Strong alcoholics should never be given when the stomach is free of food. (6) Alcohol is a valuable food in disease; requiring no primary assimilation, it yields force rapidly to an exhausted system and in small quantities it promotes appetite. (7) It is well to bear in mind that the purer the whisky or brandy,

the less liable it is to produce digestive disturbances. (8) Finally, it is true, as Wood says, that "Science in no way contradicts the experience of every *bon vivant* that the small doses of alcohol increase, and larger amounts interfere with, the activity of digestion."—*N. O. Med. Surg. Jour.*

GELATIN AS A HEMOSTATIC.—Miwa quotes the works of a Chinese physician dating from 204 to 219 A. D., in which gelatin is recommended as a hemostatic for all kinds of hemorrhage. It has been in use ever since for this purpose in China and for a thousand years in Japan. It was applied in an aqueous solution or as a powder, usually combined with other substances. It also enjoyed a reputation as a regenerator of the blood.—*Centralb. f. Chir., Jour. A. M. A.*

FAKIRS CAUSE TROUBLE.—A wail follows the visit to Auburn, Neb., of a firm of traveling dentists who visited the town last month, as it is stated that everyone treated by them required the services of a physician later for hemorrhage, blood-poisoning, dislocation of jaw, etc.—Two men in Maysville, Ky., did a land office business for six weeks and then disappeared, leaving numerous unpaid bills and a host of gullible patients with aching teeth, defective fillings, etc. Verily, verily, a sucker is born every minute.

DIVORCE UNHEALTHY.—Prussian vital statistics recently published seem to show a relation of some sort between divorce, insanity and suicide. Out of a million persons, 348 divorced women committed suicide as compared with 61 married women; 386 married men committed suicide as compared with 2,834 divorced ones. In the insane asylums in Wurtemberg a similar study shows 3,024 persons who have been divorced as compared with 283 married persons, 460 bachelors and maids, and 672 widows and widowers.

FAITH AND TOOTHACHE.—The Christian Scientist had labored long and earnestly with the dentist, to convince him that there was no such thing as pain, and he closed the discussion by saying, "Faith will move mountains." One week later he reported with a swollen jaw and a raging toothache, and stated that while faith might move mountains it seemed to have no effect on a cavity.

MARRIED.—M. A. H. Jones, Iowa City, Ia.—Frances Barnett, Shelby, Ia., July 23, 1902. H. C. King, Bakersfield, Cal.—Carrie F. Sparks, Bakersfield, Cal., July 27. J. W. Marsh, Warsaw, Ill.—Lucy S. Cherrill, Carthage, Ill., June 12. L. G. Osmun, Glen Ridge, N. J.—Harriet Sholl, New York, July 12. C. Saunders, Denton, Tex.—Frances H. Hanson, Niles, O., Aug. 12. Charles Smith, Chicago—Martha Williams, Medea, Pa., July 10. J. L. Trinkhaus, Peoria—Marie Breitenbach, Chelsea, Mich., July 15. J. J. Volker, Alexandria, Minn.—Anna E. McCallan, July 30.

FINISHING ALUMINUM PLATES.—By V. I. Miller, D.D.S., Fostoria, O. I have been using a method of finishing aluminum plates which I have found more satisfactory than any polish I have been able to get on them, and thought it might be of interest. After rubber attachments are polished: First, wash the plate in benzine or gasoline to remove any grease or oil that may be on the plate; second, apply a 40 per cent solution of caustic potash; third, nitric acid, full strength, then wash in clear water. The potash and

acid may be conveyed by means of a small piece of cotton held in soldering pliers. I have plates treated in this manner that have been worn about two years and their appearance is still very pleasing.—*Summary.*

ILLEGAL PRACTITIONERS.—A dentist of Oswego, Ind., was fined \$35 August 6 for practicing dentistry without a license. Complaint was made by a patient, who claimed the work was unsatisfactory. A dentist at Virginia City, Mont., was arrested August 13 for failure to have a license, and put up a cash bond for his appearance for a trial. Two dentists at McKeesport, Pa., managers of "Painless Dentistry" parlors, skipped out when threatened with arrest for practicing without being registered. A dentist at Boyd, Wis., was fined \$25 July 23 for failure to have a state license.

RHEUMATIC DISEASE OF TEMPORO-MAXILLARY ARTICULATION.—Hanum (*Munchener med. Woch.*) describes a case in which the patient, a man of forty-five years, could not press the jaws together without severe pain. A small blood cyst of the external auditory canal was found and punctured, but without relief to the painful mastication. After a week of useless therapy, the condition quickly subsided under the administration of sodium salicylate, and the author says that in similar cases of obscure pain in this region one should always keep this unusual but possible lesion in mind.

"INTERVIEWITIS" is a word nearly as good and entirely as bad as many that have been recently coined, and it is surely on a par with the thing it is designed to name. Almost every week one sees reports of interviews in the daily papers, all properly earmarked, none ever disavowed, in which it is plain that the doctor has been only too eager to be quoted. The interview is usually upon a matter about which the physician named has little knowledge and no special qualification for instructing the lay public whatever. His opinions are therefore without weight, and are almost always absurdly trite or erroneous.—*Amer. Med.*

INTESTINAL OBSTRUCTION CAUSED BY TOOTH.—Dr. Godfrey Warner of London was called to see a dentist in his neighborhood, and on arrival found him dead. The history was simply that the night previous he was taken ill with colic. The autopsy showed all the organs normal; but about midway between the duodenum and large intestine there was an obstruction in the shape of a hard foreign body. On examination it was found to be a molar tooth encysted in a membrane, which had become attached to the inner wall of the gut. It was a natural tooth and had evidently been there for a long time.—*Merck's Archives.*

TOBACCO SMOKE; ITS ACTION ON MICROBES.—Tobacco smoke has long been esteemed by many to have a protective action in certain epidemics. Dunon, a French observer, has recently endeavored to estimate the true value of the idea by studying the action of smoke on the development and virulence of numerous organisms. He finds that whereas tobacco smoke has no influence on the development of the bacilli of tetanus, of typhoid fever, of streptococcus, or of tetrigenus, it does modify considerably the development of the organisms of pneumonia, diphtheria, tuberculosis, grippe, and of the staphylococcus. It is therefore possible that tobacco smoking may have a valuable prophylactic function, and may be wisely employed by those attending cer-

tain diseases, in which the development of the infection occurs in the mouth.
—*Med. Age*.

BLOOD POISON CURED BY ELECTRICITY.—A surgeon accidentally pricked his finger during an operation and became infected. The hand and arm began to swell and the surgeon became delirious. A needle attached to the negative pole of a fifty-cell galvanic battery was thrust deeply into the finger at the point of inoculation. Electrolysis, with the full capacity of the fifty-cell battery, followed for about one minute. After this treatment the pain and swelling subsided. Then strong galvanic currents were passed through the inflamed lymphatics by means of surface electrode. Other electrical treatment followed and effected a cure.—*Lancet*.

MEASURING MEDICINES.—In measuring medicines, or in speaking of their doses, the word drop should be left out and the word minim substituted. Drops vary with the form and material of the containers from which they are dropped, and also with the mobility and density or tenacity of the fluid. To illustrate: Sixty drops of water will measure sixty minims. Fifty drops of syrup or gum arabic will measure sixty minims. Two hundred and fifty drops of chloroform will measure sixty minims. Watery fluids—one drop equals one minim. Alcohol fluids—two drops equal one minim. Etheral fluids—four drops equal one minim.—*Exchange*.

HEALTH FOOD AD.—The day of his execution had come.

He arose, dressed himself and performed his ablutions.

"What will you like for breakfast?" asked the kind-hearted jailer.

"I suppose you have ham and eggs, fried potatoes and coffee?" said the condemned man.

"Yes," replied the jailer.

"Well, I don't want them," he rejoined, with a discordant laugh. "Bring me some kind of health food and a cup of cereal coffee, and I will die with joy."—*Med. Standard*.

EXPERT EVIDENCE AND TESTAMENTARY CAPACITY.—The Supreme Court of Iowa holds, in the case of *Marshall vs. Hanby*, that it is not for a witness, though an expert, to say what will constitute capacity. That is a question of law for the court, and when advised the jurors are to say whether, in view of all the evidence, it was possessed by the deceased at the time the will was signed. The opinion of the expert must be limited to the estimate of the mental condition of the person concerning whom inquiry is made, and never allowed to be given as to the effect of that condition upon the particular transaction being investigated.—*Jour. A. M. A.*

LEFT-HANDEDNESS.—Leuddeckens claims that this is not a habit but is always due to physiological causes, often an expression of the influence of heredity. Normally the blood-pressure is greater in the left cerebral hemisphere than on the right side. When this pressure is stronger upon the right side, left-handedness results. In one case reported, in which the pressure was equal in both hemispheres, an alternating preponderance of one or the other side occurred, depending upon blood-pressure variations. The term left-handedness is unsuitable, since phenomena are noted upon one entire side of the body, as Leuddeckens noticed in the case of his young son. He

believes that all attempts to overcome left-handedness should be stopped, since a high degree of efficiency upon that side may be acquired.—*Zeitschrift für Psychologie und Physiologie der Sinnesorgane*.

ADRENALIN IN ANESTHETIC SOLUTIONS.—From experiments Elsberg is convinced that the addition of adrenalin chlorid in proportion of 1 to 5,000 to 1 to 20,000 solution for local anesthesia has a distinct value in minor operative surgery in that it almost entirely does away with the oozing of blood from the wound. As adrenalin is a cardiac stimulant, he says it has the additional advantage that it will counteract the depressing effect of the eucain or cocain; because it keeps the local blood vessels firmly contracted for a number of hours, it will prevent the congestion, and hence the pain which is so apt to follow after the anesthetic effects have worn off.—*Am. Med.*

COUNSEL TO SMOKERS.—The Royal Academy of Belgium gives the following advice to smokers: "Do not use moist tobacco, since nicotin then escapes with the vapor and is not decomposed. Do not smoke either while fasting or a short time before meals. When smoking cigars or cigarettes always use an amber, meerschau, horn or cherry holder. Nicotin vaporizes at 250 degrees, and the portion of it which is not decomposed in the center is attracted toward the tip, and accumulates there; it is, therefore, prudent to throw away the last quarter of a cigar. Do not smoke a pipe which has a short stem. Of all methods of smoking, the cigaret is the least offensive."—*Med. Record*.

ACCIDENTS.—A vulcanizer exploded in a dentist's office at Lowell, Mass., July 17, and wrecked the room, part of the vulcanizer going clear through the ceiling. The same thing occurred August 10 in the office of a dentist at Rahway, N. J. Fortunately the dentist had just left the room. A dentist at York, Pa., was blown ten feet and had his office badly damaged by the explosion of an apparatus for manufacturing vitalized air. A dentist at Marshfield, Wis., was badly burned July 14 by the explosion of an alcohol stove in his laboratory. A gasoline stove exploded in the laboratory of a dentist at Fond du Lac, Wis., and badly injured the dentist. Fire ensued and caused a loss of about \$2,000.

SALE OF DRUGS BY PHYSICIAN.—Section 2620 of the Kentucky statutes makes it a misdemeanor to sell or compound drugs, except for a registered pharmacist, or under his immediate supervision. Section 2632 provides: "Nothing in this act shall apply to or in any manner interfere with the the business of any licensed practicing physician, or prevent him from supplying to his patients such articles as may seem to him proper, or with his compounding his own prescriptions." It will be seen, the Court of Appeals of Kentucky says, in the case of Commonwealth vs. Hovious, that this section does not, simply in general terms, exempt physicians from the provisions of section 2620. The true meaning and intent of section 2632, in the court's opinion, is to allow a physician to compound or sell any kind of drugs to his own patients, but not to fill prescriptions sent to him by others. In other words, if a party applies to a physician for examination and treatment, the physician, the court holds, may furnish him any kind of drugs that in his judgment is proper, or compound for him any kind of

drugs or medicine; but he cannot sell drugs indiscriminately to persons calling for the same, nor compound drugs and sell them indiscriminately to all who may call for them. It results, it holds, that it was error to adjudge not guilty of violating section 2620 a regular licensed physician who carried on the business of a retail druggist in person and by an agent, without obtaining the certificate required by law of pharmacists.—*Jour. A. M. A.*

SKEPTIC CONVERTED.—There is a well-authenticated case, says an exchange, which occurred at Atlantic City some years ago, which shows how powerfully simple things sometimes operate upon the human system. There was a presumptuous young man who ridiculed the homeopathic treatment. A gentleman who heard his gibes undertook to administer a lesson to him. He took several drops of water from the ocean at a spot where a party of young ladies had been bathing, diluted it in a gallon of rainwater and then administered two drops to the skeptic at intervals of one hour. The next day the young man screamed when he saw a mouse, and two days later, the doses being continued, he was knitting a nubia.

THE DOCTOR WHEN HE'S SICK.

I have patched the voice of singers,
And have robbed the sneeze from grip,
Knocked the chills clear out of ague,
Cured the smallpox every trip.
But one stunt has always floored me,
Always will—this little trick—
Giving pills and soft emulsions
To the doctor when he's sick.

—G. T. P., *Chicago Clinic.*

DAMAGE SUITS.—A woman in Philadelphia has sued a "Painless Dental Company" in that town for dislocating her jaw and for swindling her on a guarantee for a set of teeth.—A woman in Chicago has sued a dental parlor for \$10,000, alleging that blood poisoning set in after she had some teeth extracted in the place.—A woman in Terre Haute has sued a dentist in that city for \$10,000 damages, claiming that while extracting a tooth he inoculated her with a loathsome disease, owing to the fact that the forceps were dirty. The dentist's defense is that she had the disease before she came to him, that he refused to work for her on that account, and that she has brought suit to get even.

ANTAGONISM OF MORPHIN AND ATROPIN.—E. Bashford has studied the action of atropin as an antidote to morphin, and arrives at the conclusion that it is difficult to say whether morphin and atropin are mutually antagonistic, that is to say whether morphin could save from death a subject poisoned by atropin, or vice versa. The author experimented on rats, and found that if the minimum lethal dose (determined by experiment) was hypodermically injected from $\frac{1}{12000}$ to $\frac{1}{30}$ of the minimum fatal dose of sulphate of atropin was effectual in averting death. A larger quantity of atropin was not only useless, but sometimes hastened the death of the animal by adding the toxic effect of atropin to that of morphin. Half the minimum lethal dose of morphin is fatal if combined with one-third the poisonous dose

of atropin. If a larger quantity of morphin is administered the effective dose of atropin is greatly limited. The extremely small amount of atropin which can with safety be given in cases of morphin poisoning is the most important fact which observers have established.

SODA FOUNTAIN PARAPHERNALIA of our cities are abominable habitats of disease germs, so slovenly are they utilized by the often uncouth dispensers. Soda water has become such a national beverage that it would seem well-nigh impossible to get along without its soothing effects and the palatable syrups which are nearly always served with it, but it is often the case that the imbiber of a delicious glass of soda takes in so many dangerous microbes with each contraction of the gullet that it would keep him counting all through the succeeding winter to enumerate them all. The remedy is proper cleanliness on the part of those who serve the fountain and handle the drinking glasses, spoons, etc. Every utensil used in common should be sterilized after being used, so that it will be absolutely clean for the next user.—*Pub. Health.*

HIS SENSITIVE NERVES.—It was half an hour past the time for raising the curtain, but the great musician did not appear. At last the manager came to the front of the stage and said: "Ladies and gentlemen, you will pardon this long delay, I am sure, when I explain that Mr. Kabaleffski's nerves have become so greatly overwrought in consequence of the incessant, monotonous motion of the earth from west to east, of which he became suddenly and painfully conscious a short time ago, that at first he refused to make his appearance at all this evening unless the motion could be changed, but in response to our earnest entreaty he has modified this demand, and is engaged in adjusting his nerves to the conditions which, as he sees now, are practically unalterable. With your permission he will complete the process in about fifteen minutes, until the expiration of which time we shall ask your kind indulgence. Thanking you, ladies and gentlemen, for your patience, I will now retire.—*Med. Standard.*

NECROSIS OF THE INFERIOR MAXILLA FROM DENTAL CARIES.—In the *Bulletin Medical* appears a clinic upon necrosis of the lower jaw from dental caries, delivered recently by Professor Broca at the Tenon Hospital. Even in children carious teeth often cause true osteitis of the inferior maxilla. He showed a number of cases to illustrate this condition. One of the early symptoms is earache, worse at night. Later swelling of the gums appears, and it is not generally difficult to find the tooth which is the cause of the condition. In some cases necrosis follows this acute osteitis, with the formation of sequestra, the condition running a subacute or chronic course. In one case a hyperostosis occurred. In all cases the offending teeth must first be extracted, then abscesses are to be evacuated, and packed, if necessary, with dry gauze. Antiseptic washes are advised, the best of which Broca considers to be a 1 per cent solution of chloral, to which a few drops of essence of peppermint have been added. Operative interference is often necessary early in the case. The majority of these cases recover very quickly after the removal of the tooth and the evacuation of the existing abscess.—[M. O.]

CONTENTS.

ORIGINAL CONTRIBUTIONS—

Original System Tightening Loose Incisors and Cusps; also About Pulp Devitalization, Dental Science and Literature; Report of the Committee,	By D. D. SMITH.....	629
Embryology of the Dental Pulp, Electric Ozonation in Neuralgia,	By G. V. BLACK.....	641
	By R. R. ANDREWS.....	658
	By G. LENOX CURTIS.....	666
DIGESTS —Porcelain Bridgework, 672. Artificial Dentures, 673. Perfect Fitting Dental Clasp, 682. Localized and Reflex Apical Pericementitis Due to Septic Infection of Pulp, 683. Packing Amalgam in Cavities in Buccal Surface, 685. Cleft Palate Case, 687. Shell Crown with Porcelain Facing, 691.		
LETTERS —Warning by McKesson and Robbins		693
Authorship of Papian Method, By J. S. Cassidy		693
Reputates German-American College, By Etienne Stump		693
Boss's Dream, By F. W. Sage		695
EDITORIAL —Finale of Bogus Diploma Mill		699
Where Forgetting is Bliss 'Tis Folly to Remember		701
Decision Against German-American Dental College		704
NOTICES.....		703
NEWS SUMMARY.....		713

INDEX TO ADVERTISEMENTS.

American Cabinet Co.—Benches, etc.	47	Hance Bros. & White—Ph. Sodique.	45
American Hard Rubber Co.....	64	Hisey Mfg. Co.—Anesthetic.....	60
American Hardware Mfg. Co.....	32	Ideal Chemical Co.—Anesthetic.....	52
Antikamnia Chemical Co.....	2	Illinois Dental Laboratory Co.....	20
Antidolar Mfg. Co.—Anesthetic.....	65	Illinois University—Dental College..	70
Atlanta Dental College.....	68	Indiana Dental College.....	71
Atlas Dental Lab. Co.....	50	Johnson & Johnson—Specialties.....	45
Austin, Robt.—Specialties.....	30	Kiewe & Co.—Jenkins' Porcelain....	53
Baltimore College of Dental Surgery.	75	Knapp, H. G.—Obtundant.....	59
Barker, W. H.—Polishers.....	57	Kress & Owen—Glyco-Thymoline. Cover	1
Bennett, G. L.—Forceps.....	26	Lambert Pharmacal Co.—Listerine.....	3
Berry Mfg. Co.—Plate Retainer.....	63	Louisville College of Dentistry.....	66
Birmingham Dental College.....	74	McConnell, J. W.—Chair.....	32
Blair-Wedekind Co.—Spittoon.....	56	McKesson & Robbins..... Cover page 3	
Brewster, R.—Porcelain...40, 41, 42, 43		Manhattan Dental Co.—Pl. Stiffeners	65
California Univ. Dental Dept.....	65	Marion-Sims Dental College.....	69
Chicago College Dental Surgery.....	72	Mason, L. J., & Co.—Engine.....	54
Chicago Dental Specialty Co.....	37	Meier, D. M., Co.—Specialties.....	34
Chicago Post-Graduate Dental Coll..	67	Michigan University—Dental Dept.....	71
Chicago Water Motor and Fan Co.....	31	Minn. Univ.—Coll. of Dentistry.....	79
Cincinnati College Dental Surgery..	72	Missouri Dental College.....	68
Clark, A. C., & Co.—Spittoon.....	36	Moore, E. C., & Son—Apron.....	57
Dee, Thos. J., & Co.—Refiners.....	55	Morgan & Wright.....	25
Detroit Dental Mfg. Co.—Specialties.	48	Morgan-Maxfield—Disk Mandrel.....	38
Dental Protective Supply Co.—		Morgan, Hastings & Co.—Gold Foil..	22
Angle Attachment.....	10	Munson, C. W.—Teeth.....	44
Ductile Alloy..... Cover		Nelms, H., & Son—Gold.....	61
Fellowship Alloy.....15, 23		New York College of Dentistry.....	73
Fellowship Burs.....	6	New York Dental School.....	73
Fellowship Cement.....	11	Northwestern Univ.—Dental Dept..	76
Fellowship Teeth.....	4	Oakland Chem. Co.—Hydrogen Dioxid	3
Fellowship Twist Broaches.....	12	Odontunder—Anesthetic.....	60
Fellowship Broaches.....	13	Ohio College of Dental Surgery.....	74
Fellowship Dental Engine.....	14	Parke, Davis & Co.....	5
Fellowship Handpiece.....8, 9, 38		Peck, A. E.—Inlay System.....	58
Fellowship Lathe.....	19	Penna. College of Dental Surgery....	77
Fellowship Right-Angle Mallet.....	16	Philadelphia Optical College.....	25
Mall Orders, etc.....	18	Place, J. W.—Crown System.....	21
Repair Work.....	7	Polk, R. L.—Register.....	24
Rubber Dam.....	17	Rutherford, A. P.—Specialties.....	32
Denver University—Dental Dept.....	71	Sanitol Co.—Sanitol.....	2
Driskill, T. F.—Specialties.....	59	Scharmann, G.—Cement and Burs....	49
Florence Mfg. Co.—Tooth Brushes..	80	Scherer & Glatz—Euclain.....	27
Georgetown Univ.—Dental Dept.....	66	Sims Hydraulic Engine Co.....	33
Gesswein, F. W. Co.—Ruby Crystalal.	24	So. Calif. Univ. Coll. of Dentistry..	79
Gilbert, S. E., M. D. Co.—Specialties.	62	Star Specialty Co.....	59
Goldsmith Bros.—Refiners.....	46	Stowe & Eddy Co.—Laboratory.....	38
Goodrich, B. F., Co.—Rubber.....	27	Teague, D. S., Co.—Specialties.....	29
Graves, E. L.—Tooth Powder.....Cover		Terraplastic Mfg. Co.—Specialties..	35
Green, L. O.—Acestoria.....	28	Turner Brass Works—Furnaces.....	39
Howard, C. T.—Strips.....	24	Twist, Dr. J. F.—Crowning Outfit....	51
Harvard University—Dental Dept.....	79	Vegetol Co.—Vegetol.....	31
Hall, Wm. R. & Son—Specialties.....	58	Willson, H. B.—Patents.....	25
Hall & Ruckel—Sozodont.....	21	Western Reserve Univ.—Coll. of Dent.	79